







Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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## ST – Generic Scan Tool

### 1 General Information

(Edition 07.2022)

Included in the contents of this Generic Scan Tool (GST) manual is a summary table of the vehicle specific OBD II Emission Related DTCs. The DTC table contains DTC Malfunction Criteria, Threshold Values, Secondary Parameters, Enabling Conditions, Monitoring Time Length, Frequency of Checks, and MIL Illumination information which can be used to accurately monitor and diagnose emissions related faults and perform functions required to run Modes 01 through 0A (if applicable) with a hand held scan tool.

This manual also contains the step by step procedures to accurately diagnose and repair a component or system once a DTC has been set. References to repair procedures and wiring diagrams can be found within the diagnostic test procedures.

- ♦ ⇒ P1.1 recautions", page 2
- ♦ ⇒ W1.2 orking Conditions", page 4



## 1.1 Safety Precautions

Check for Technical Bulletins that may supersede any information included in this manual.







#### WARNING

Failure to follow these instructions may result in personal injury or possible death.

Check the Technical Bulletins for information, cautions and warnings that may supersede or supplement any information included in this manual.

When performing the drive cycle operation, pay strict attention to driving conditions and observe and obey all posted speed limits.

Test equipment must always be secured to the rear seat and operated by a second person. If test and measuring equipment is operated from the passenger seat, the person seated could be injured in the event of an accident involving deployment of the passenger-side airbag.

The fuel system is under pressure! Before opening the fuel system, place rags around the connection area. Then release pressure by carefully loosening the connection.

G does not guarantee of acceptant liability with respect to the correctness of information in the correctnes The engine section of the fuel system, after the high pressure pump, is under extremely high pressure! When working on engine or fuel injection system, fuel pressure must be relieved to residual pressure before opening high pressure components. Refer to the Service Manual for the proper procedure.

If the battery has not been disconnected, the fuel pump fuse must be removed before opening the fuel supply system as the fuel pump may be activated by the driver's door contact

Testing of the EVAP and ORVR systems can result in the escape of explosive fuel vapor. Do not smoke while testing the EVAP system, and make sure the area you are working in is well ventilated.

Observe the following for all procedures, especially in the engine compartment due to lack of room:

- Route lines of all types (e.g. for fuel, hydraulic, EVAP canister system, coolant and refrigerant, brake fluid, vacuum) and electrical wiring so that the original path is followed.
- Watch for sufficient clearance to all moving or hot components.
- Do not touch or disconnect the Ignition Coils, ignition wires, connecting parts or adapter cables when the ignition is on or the engine is running or turning at starting RPM.
- Only disconnect and reconnect wires for injection and ignition system, including test leads, when the ignition is turned off.

When removing and installing components from full or partially full fuel tanks, observe the following:

- The fuel tank must only be partially full. How much fuel can remain in the fuel tank may be read in the respective work description. Empty the fuel tank if necessary.
- Before starting work, switch on the exhaust extraction system and place an extraction hose close to the installation opening of the fuel tank to extract escaping fuel fumes. If no exhaust extraction system is available, a





radial fan (as long as motor is not in air flow) with a displacement greater than 15 m³/h can be used.

Prevent fuel from contacting the skin! Wear fuel-resistant gloves!

When servicing the engine control module (ECM), it may be necessary to use a heat gun. The heat gun, shear bolts, and parts of the protective housing will become extremely hot. Use extreme caution when working with or handling these parts to avoid personal injury.

Observe operating instructions when working with a heat gun. To prevent damage (burning) to the wiring and harness connections, insulation and the electronic components, perform outlined work steps exactly!

The cooling system is under pressure. To avoid scalding, use caution when opening the cooling system and servicing cooling system components!



#### Caution

The battery must only be disconnected and connected with the ignition switched off. Otherwise, the engine control module (ECM) can be damaged.

The use of nails, paper clips, or another unauthorized materials to back-probe harness connectors is strictly prohibited and may cause damage to the harness connectors, terminal ends or to a component. Use only the manufacturers test lead kit or an equivalent aftermarket test lead kit for back-probing all harness connectors.

Do not use sealants containing silicone. Particles of silicone drawn into the engine, will not be burned in the engine and will damage the oxygen sensors.

Secure all hose connections with the correct hose clips (the same as original equipment).

If engine is to be cranked without starting (for example; as part of a compression test), remove the fuses for the voltage supply of ignition coils and the fuel injectors.

An electrostatic charge can lead to functional problems of electrical components of the engine, transmission and selector lever mechanism. Touch a grounded object, e.g. a water pipe or a hoist, before working on electrical components.

Do not make direct contact with harness connector terminals.

Use only gold-plated terminals when servicing any component with gold-plated harness connector terminals.

## 1.2 Clean Working Conditions

Even minor contaminations can lead to malfunctions in the fuel injection system. When working on the fuel supply/injection system, pay careful attention to the following rules of cleanliness:

- Thoroughly clean all connections and the surrounding area before disconnecting.
- Place removed parts on a clean surface and cover. Use lint-free cloths.
- Carefully cover opened components or seal, if repairs are not performed immediately.



- When the system is open, do not work with compressed air.
   Do not move vehicle unless absolutely necessary.
- ◆ Install clean components: Remove the parts being replaced immediately prior to installation of the new parts. Do not use parts that have been stored unpacked (e.g. in tool boxes etc.).
- Electrical connectors that have been disconnected: Protect from dirt and moisture. Make sure connections are clean and dry when reconnecting.



#### 2 **Description and Operation**

- ⇒ B2.1 oard Diagnostic Systems", page 6
- ⇒ E2.2 mission System", page 6
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#### 2.1 On Board Diagnostic Systems

Protected by copyright, Copyright On Board Diagnostics, or OBD, is an automotive term referring to a vehicle's self-diagnostic and reporting capability. OBD systems give the vehicle owner or repair technician access to the status of the various vehicle sub-systems. Modern OBD implementations use a standardized digital communications port to provide real-time data in addition to a standardized series of Diagnostic Trouble Codes (DTCs) which allow one to rapidly identify and remedy malfunctions within the vehicle. Legislation mandates a vehicle equipped with OBD-II to light up the fault indicator lamp if its emissions exceed the prevailing limit due to system malfunction.

All cars built since January 1st, 1996 (MY 1996) are equipped with OBD-II systems. Manufacturers started incorporating OBD-Il in various models as early as 1994; however, some early OBD-II cars (MY 1994 and MY 1995) were not 100% compliant.

#### 2.2 **Evaporative Emission System**

The evaporative emission system has been designed to minimize the release of hydrocarbons from the fuel system into the atmosphere. The evaporative emission system components all work together with the ECM to prevent fuel vapor from escaping and route it to the intake manifold to be burned during normal combustion.

The leak detection system checks the integrity of the evaporative emission system by pressurizing the system.

- There are 3 different types of evaporative emission systems used. These systems are explained below.
- ⇒ D2.2.1 etection Pump (LDP) EVAP System", page 7
- ⇒ L2.2.2 eak Diagnostic Module (DM TL) EVAP System", page 7
- ⇒ V2.2.3 acuum Leak Detection (NVLD) EVAP System", page 7
- ⇒ S2.2.4 ystem, Checking For Leaks", page 7





## 2.2.1 Leak Detection Pump (LDP) EVAP System

The leak detection pump (LDP) is integrated into the EVAP system and can have two functions. The LDP can:

- Pressurize the EVAP system and detect a drop in pressure that would indicate a leak.
- Function as the EVAP Canister Vent on vehicles that do not have a separate EVAP Canister Vent.

The LDP is a vacuum-driven, ECM controlled, diaphragm pump. In order to operate, the engine must be running and vacuum applied to the Vacuum Switch.

## 2.2.2 Tank Leak Diagnostic Module (DM - TL) EVAP System

The canister purge valve can be actively checked using the Tank Leak Diagnostic Module (DM - TL). For this purpose the electric pump is shortly activated while the combustion engine is running, to build up a minor pressure in the fuel tank and monitor the pressure decay after opening the canister purge valve. Optionally as a quick pass method, the monitoring can be carried out by passively monitoring the fuel mixture deviation when the canister purge valve is opened. If a significant fuel mixture deviation is detected, the purge valve monitor passes. The Tank Leak Diagnostic Module (DM - TL) consists of an electrically operated air pump, an orifice with a defined diameter serving as a reference leak, and a change-over valve switching the air flow between the reference leak and the tank. If neither the pump nor the change-over valve is activated, the tank is ventilated through a bypass in the module.

## 2.2.3 Natural Vacuum Leak Detection (NVLD) EVAP System

The system utilizes an engine-off natural vacuum evaporative system integrity check that tests for leaks with a diameter of 0.020 inch while the engine is off and the ignition is off. The natural vacuum leak detection (NVLD) evaporative system integrity check uses a pressure switch to detect evaporative system leaks. The correlation between the pressure and the temperature in a sealed system is used to generate a vacuum in the tank when the temperature drops. If a sufficient temperature drop is detected for a minimum time period, the vacuum level in a sealed system will exceed the threshold to close the NVLD pressure switch. Therefore, if the switch does not close under these conditions, a leak is detected. If the switch closes, the system is considered to be leak-free.

## 2.2.4 EVAP System, Checking For Leaks

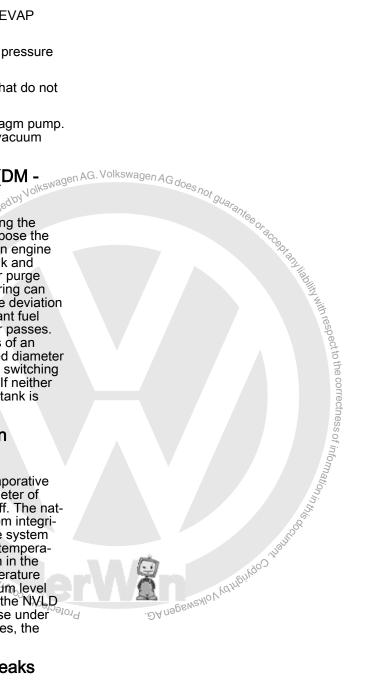
The following procedure is used to diagnose EVAP System leaks.

#### Special tools and workshop equipment required

- Smoke tester.
- EVAP and Fuel Supply System Vacuum hose and line routing diagram.

#### Leak checking

- Using a Smoke tester, check the Evaporative Emission (EVAP) canister system for leaks.
- Always follow the manufacturers directions for the proper installation and operation of the smoke tester being used.





#### If a leak is detected:

- Check the fuel filler cap seal for damage and for proper installation. Replace if necessary.
- Check all hose connections of the fuel supply system and replace or repair any leaking lines.

#### If no leaks are found in the EVAP system:

#### If a DTC was set and does not return:

Diagnosis complete. Generate readiness code. Refer to ⇒ C3.2 ode", page 15.

#### If the same DTC does return and no leaks are found in the **EVAP system:**

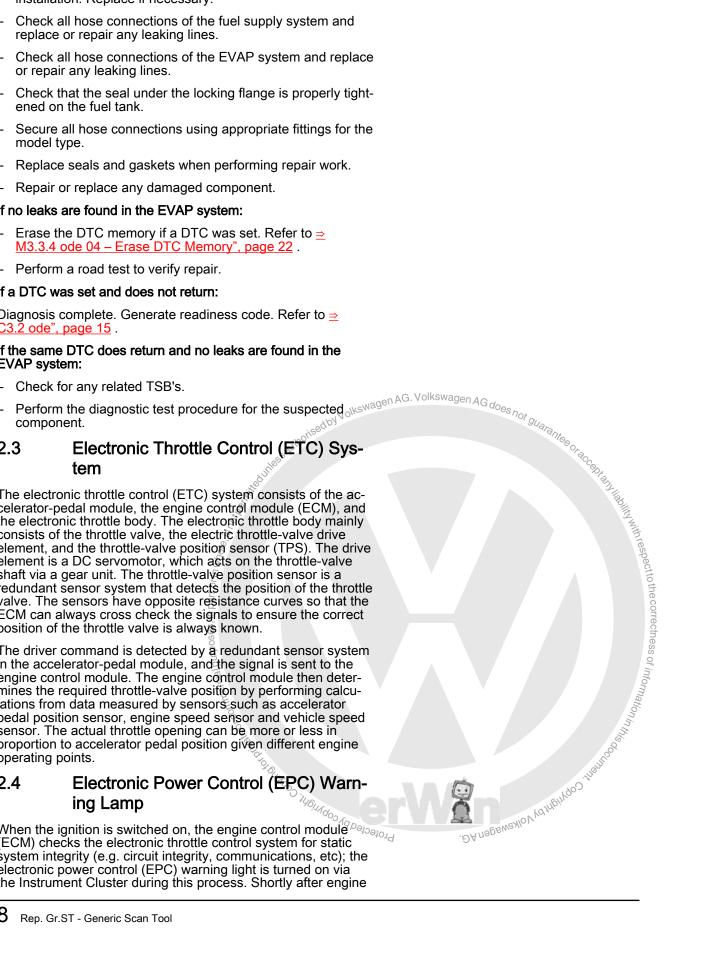
## 2.3

The electronic throttle control (ETC) system consists of the accelerator-pedal module, the engine control module (ECM), and the electronic throttle body. The electronic throttle body mainly consists of the throttle valve, the electric throttle-valve drive element, and the throttle-valve position sensor (TPS). The drive element is a DC servomotor, which acts on the throttle-valve shaft via a gear unit. The throttle-valve position sensor is a redundant sensor system that detects the position of the throttle valve. The sensors have opposite resistance curves so that the ECM can always cross check the signals to ensure the correct position of the throttle valve is always known.

The driver command is detected by a redundant sensor system in the accelerator-pedal module, and the signal is sent to the engine control module. The engine control module then determines the required throttle-valve position by performing calculations from data measured by sensors such as accelerator pedal position sensor, engine speed sensor and vehicle speed sensor. The actual throttle opening can be more or less in proportion to accelerator pedal position given different engine operating points.

## 2.4

When the ignition is switched on, the engine control module policy (ECM) checks the electronic throttle control system for static system integrity (e.g. circuit integrity, communications, etc); the electronic power control (EPC) warning light is turned on via the Instrument Cluster during this process. Shortly after engine





start, the EPC warning light is turned off if no malfunction in the electronic throttle control system is detected. In the event of a malfunction while the engine is running, the ECM will activate the EPC warning light via the Instrument Cluster and at the same time, a Diagnostic Trouble Code (DTC) is stored in the ECM memory.

## 2.5

The Engine Control Module (ECM) is a generic term for any embedded system that controls one or more of the electrical systems or subsystems in a vehicle. It controls a series of actuators on an internal combustion engine to ensure that driver commands (e.g. to accelerate) are translated into appropriate engine performance. It reads values from a multitude of sensors, interprets the data, and adjusts the engine actuators accordingly. The ECM also interacts with the transmission control module (TCM), ABS/traction/stability control module and other vehicle function related control systems.

ECM controlled systems and functions (performance and emission related) will be introduced in the following chapters. These include the OBD system, controller area network (CAN), throttle control module, fuel supply, ignition, variable valve timing, exhaust-gas recirculation, secondary air injection, exhaust system, and EVAP system.

## 2.6

When the ignition is switched on, the Engine Control Module (ECM) performs checks on static system integrity (e.g. circuit integrity, communications, etc). The Malfunction Indicator Lamp (MIL) is switched on during this process via the Instrument Cluster. After engine starts, the ECM examines engine operation for potential malfunction(s) or failure(s) that can lead to increased emission values. If no malfunction is detected, the ECM switches off the MIL via the Instrument Cluster.

In the event of a malfunction during the operation of the engine, the ECM will activate the MIL via the instrument cluster and at the same time, a Diagnostic Trouble Code (DTC) is stored in the ECM memory. In OBD systems, the MIL can have up to three stages: steady, flashing and Stop Vehicle. A steady MIL indicates a minor fault (e.g. a failing oxygen sensor) whereas a flashing MIL indicates a more severe malfunction that could result in damage of engine or exhaust system components (e.g. the catalytic converter) if left uncorrected for an extended period. This would also indicate a severe fault. The three stages are 1. ON, then OFF; 2. ON steady, 3. flashing constantly. The 3rd stage indicates damage may occur and driver must stop.

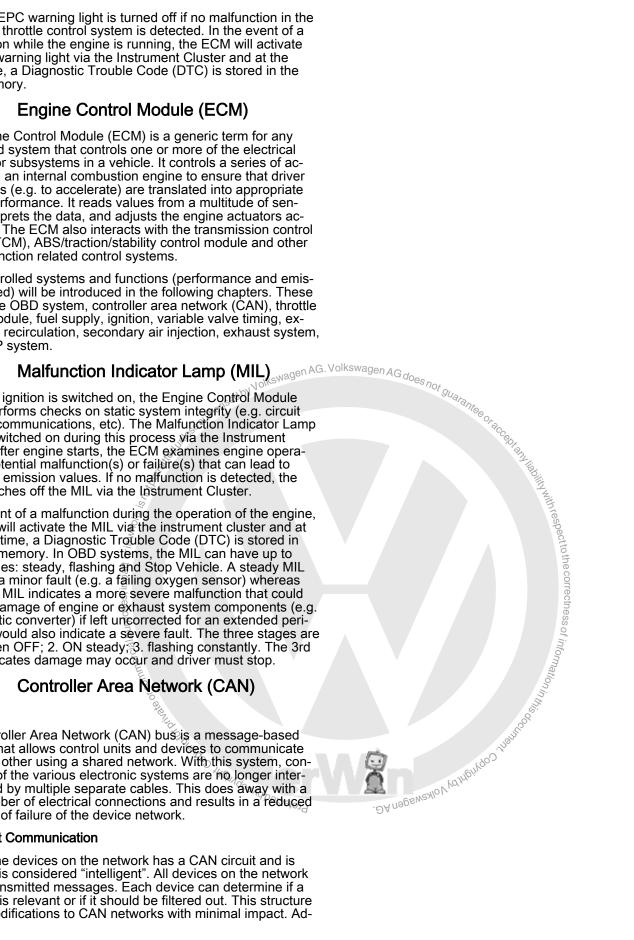
## 2.7

#### Overview

The Controller Area Network (CAN) busis a message-based protocol that allows control units and devices to communicate with each other using a shared network. With this system, control units of the various electronic systems are no longer interconnected by multiple separate cables. This does away with a large number of electrical connections and results in a reduced likelihood of failure of the device network.

#### **Broadcast Communication**

Each of the devices on the network has a CAN circuit and is therefore is considered "intelligent". All devices on the network see all transmitted messages. Each device can determine if a message is relevant or if it should be filtered out. This structure allows modifications to CAN networks with minimal impact. Ad-





ditional non-transmitting nodes can be added without modification to the network.

#### **Priority**

Every message has an assigned priority. If two nodes try to send messages simultaneously, the one with the higher priority gets transmitted and the one with the lower priority gets postponed. This arbitration does not affect other messages and results in non-interrupted transmission of the highest priority message

#### 2.8 Fuel Supply

#### Overview

The fuel supply system delivers fuel to an internal combustion engine. With carburetors being replaced by fuel injections systems in the late 1980s and 1990s, the most common types of fuel supply system currently in use are throttle body injection (single-point injection), multiport injection (MPI) and direct injection (DI).

Fuel injectors atomize fuel because high pressure is forcing the fuel through a small nozzle in the injector into the intake air stream or the combustion chamber. This process is often controlled by the ECM and is dependent on data received from other sources (e.g. mass air flow sensor, throttle position sensor, etc.) to determine the precise amount of fuel needed for any given operating condition. The primary advantages of fuel injection over carburetor are improved fuel economy, increased power output and reduced emissions. The following sections will discuss each fuel injection concept in detail.

#### **Throttle Body Injection**

Throttle body injection uses a single electrically controlled injector at the throttle body. The fuel is drawn by an electric fuel pump out of the fuel tank and flows through a paper filter into

tor at the throttle body. The fuel is drawn by an electric fuel pump out of the fuel tank and flows through a paper filter into the fuel injector. Since injection happens at the same location as the carburetor, very little engine redesign (intake manifold, fuel line routing, etc.) is necessary. The cost saving of throttle body injection compared to other fuel injection methods encouraged vast adoption in the late 1980s and early 1990s.

Throttle body injection system also inherits many disadvantages of the carburetor. One of them being the inability to precisely control the amount of fuel supplied into each cylinder, and is unable to precisely control combustion and emissions. It also restricts the design of intake manifold as any sharp bends in the intake path will cause atomized fuel to accumulate on the outer wall of the intake path. Supplying moderate engine heat to the intake manifold is also necessary to ensure that the fuel stay vaporized. This results in a relatively high intake air temperature and compromises performance.

Multiport injection (MPI)

Multiport injection (MPI)

Multiport injection (MPI)

Multiport injection for each cylinder just upstream of the intake valve. The fuel pump delivers the fuel into a high-pressure line where it flows to the fuel rail and injectors. When activated by the ECM, each injector sprays fuel at the intake port of its corresponding cylinder – this allows individual cylinders to receive the right amount of fuel in a more precisely timed manner. Sequential fuel injection mode can be applied to activate each injector individually to improve engine response. Lowered fuel consumption and emissions are also achieved.

Sequential multiport injection is still the most common fuel injecture.

tion system found on most economy cars thanks to its high efficiency, control simplicity and low manufacturing cost (compared to direct injection). However, to further improve drivability



reducing emissions and fuel ones a superior alternative.

.ctly injected (DI) engines are mounted on the and fuel is injected directly into the engine's hamber. In order to overcome the pressure in the chamber during compression and power stroke, inner one pressure in the chamber during compression and power stroke, inner one port at at a primary pressure as high as 3000. The extreme pressure level, no single the pump can erequired pressure directly from the fuel tank to the substems and components for multiport injected ensembles. The high-pressure system consists of a high-pressure system consists of a high-pressure accumulator), a high-pressure sensor and, depending on an eystem, a pressure-control valve or a pressure further. The injectors are operated by the ECM to send a precise amount of fuel from the high-pressure rail directly into the combustion chamber.

The distinctive difference between direct injection and other existing when in the combustion cycle the fuel is added and MPI systems can only add fuel during induction; A DI systems and or fuel during induction to create a homogeneous charge regain after injainot to enhance power delivery under vons.

\*\*tified injection (FSI)\*\*

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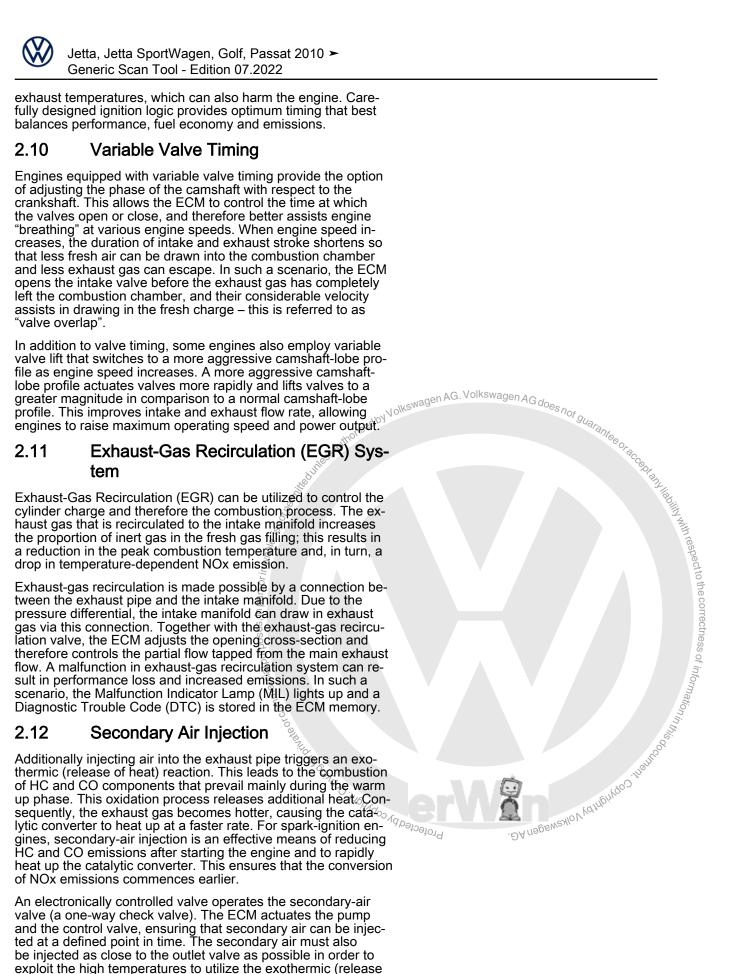
and reliable ignition under all conditions. Knock or misfire as a result of incorrect ignition can lead to destruction of engine components or damage of the catalytic converter.

#### **Timing**

Shifts in the moment of ignition (ignition timing) can result in increased emissions, decreased performance and fuel economy. Whereas more spark advance improves power and fuel economy, it also raises HC and NOx emissions. Excessive spark advance can cause engine knock which is potentially destructive to engines. If the ECM detects knock from a signal sent by a knock sensor, it will delay (retard) the timing of the spark. Excessive spark retard lowers power output and produces high



and the control valve, ensuring that secondary air can be injected at a defined point in time. The secondary air must also be injected as close to the outlet valve as possible in order to exploit the high temperatures to utilize the exothermic (release of heat) reaction effectively.



#### 2.13 **Exhaust Systems**

#### Overview

There are three important functions of the exhaust system: to reduce the pollutants in exhaust gas, muffle engine combustion noise and to discharge exhaust gas at a convenient location on the vehicle (often underneath the rear bumper). A passengercar exhaust system consists of the following; exhaust manifold, exhaust treatment components, sound absorption components and the system of pipes connecting these components.

#### **Exhaust Manifold**

The manifold is an important component in the exhaust system. It routes the exhaust gas out of the cylinder outlet ports into the subsequent exhaust system. The geometry of the manifold (i.e. length and cross-section of the individual pipes) has an impact on the performance characteristics, the acoustic behavior of the exhaust system, and the exhaust temperature. In some cases, the manifold is insulated with an air gap to quickly reach high exhaust temperature and to shorten the time taken by the catalytic converter to reach its operating temperature.

### **Emission Control**

The primary emission control component is the catalytic converter, which breaks down the gaseous pollutants in the exhaust gas (CO, HC and NOx). Catalytic converters are installed as close as possible to the engine so that they can quickly reach their operating temperature and therefore be effective in urban driving It also bears a sound-absorbing function, especially to the higher frequency portion of the engine combustion noise.

#### Sound Absorption

Mufflers dampen or absorb the noise produced by engine combustion. In principle, they can be installed at any position in the exhaust system. However, they are mostly located in the middle and rear sections of the exhaust system. Depending on the number of cylinders and engine output, generally 1 to 3 mufflers are used in an exhaust system. In V-engines, the left and right cylinder banks are often run separately, each being fitted with its own catalytic converters and mufflers. Although the aim of mufflers is to reduce noise in compliance with legislations, they can also help to create the sound specific to the type of vehicle.

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Step 1	Diagnosis and Testing  C3.1 heck", page 14  C3.2 ode", page 15  M3.3 odes 01 – 0A", page 17  D3.4 TC Tables", page 653  Preliminary Check  Note  Preliminary Check  Note  Preliminary Check must be performed.  Procedure Testing: Refer to page 14  Procedure  Procedure  CONNECT: Scan Tool.  IGNITION: ON.  CHECK: For stored or related DTCs.  Were any other DTCs stored?  Repair these DTCs first before performing any of the following steps.  Using the Scan Tool, erase the DTC memory.  Refer to M3.3.4 ode 04 – Erase DTC Memory", page 22.	◆ GO TO: Step 4 <u>⇒ page 14</u> .
Step 1	Refer to ⇒ M3.3.4 ode U4 – Erase DTC Mem-	Result / Action to Take  - YES:  GO TO: Step 2 ⇒ page 14.  NO: GO TO: Step 3 ⇒ page 14.  GO TO: Proper Diagnostic procedure per the stored DTC. Refer to ⇒ D3.4 TC Tables", p 73.  - YES: GO TO: Step 4 ⇒ page 14.  NO: GO TO: Step 5 ⇒ page 14.
	<ul> <li>Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22 .</li> <li>Perform a road test to attempt to duplicate the customers complaint.</li> <li>Does DTC return?</li> </ul>	<ul> <li>GO TO: Step 4 ⇒ page 14 .</li> <li>NO:</li> <li>GO TO: Step 5 ⇒ page 14 .</li> </ul>
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	<ul> <li>Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.</li> <li>Perform a road test to attempt to duplicate the customers complaint.</li> <li>Does DTC return?</li> <li>Perform the diagnostic procedure for that</li> </ul>	<ul> <li>GO TO: Step 4 ⇒ page 14 .</li> <li>NO:</li> <li>GO TO: Step 5 ⇒ page 14 .</li> <li>GO TO: Proper Diagnostic procedure per the stored DTC. Refer to ⇒ D3.4 TC Tables", p</li> </ul>
4	<ul> <li>Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.</li> <li>Perform a road test to attempt to duplicate the customers complaint.</li> <li>Does DTC return?</li> <li>Perform the diagnostic procedure for that DTC.</li> </ul>	<ul> <li>GO TO: Step 4 ⇒ page 14.</li> <li>NO:</li> <li>GO TO: Step 5 ⇒ page 14.</li> <li>GO TO: Proper Diagnostic procedure per the stored DTC. Refer to ⇒ D3.4 TC Tables", p. 73.</li> <li>Perform a road test to verify the repair.</li> <li>Generate readiness code. Refer to ⇒</li> </ul>
4	<ul> <li>Refer to ⇒ M3.3.4 ode 04 - Erase DTC Memory", page 22.</li> <li>Perform a road test to attempt to duplicate the customers complaint.</li> <li>Does DTC return?</li> <li>Perform the diagnostic procedure for that DTC.</li> <li>FAULT: Intermittent or a sporadic condition.</li> </ul>	<ul> <li>GO TO: Step 4 ⇒ page 14.</li> <li>NO:</li> <li>GO TO: Step 5 ⇒ page 14.</li> <li>GO TO: Proper Diagnostic procedure per the stored DTC. Refer to ⇒ D3.4 TC Tables", p. 73.</li> <li>Perform a road test to verify the repair.</li> </ul>
4	<ul> <li>Refer to ⇒ M3.3.4 ode 04 - Erase DTC Memory", page 22 .</li> <li>Perform a road test to attempt to duplicate the customers complaint.</li> <li>Does DTC return?</li> <li>Perform the diagnostic procedure for that DTC.</li> <li>FAULT: Intermittent or a sporadic condition.</li> <li>CHECK: Suspected components.</li> <li>PERFORM: Visual Inspection of wiring and</li> </ul>	<ul> <li>GO TO: Step 4 ⇒ page 14.</li> <li>NO:</li> <li>GO TO: Step 5 ⇒ page 14.</li> <li>GO TO: Proper Diagnostic procedure per the stored DTC. Refer to ⇒ D3.4 TC Tables", p. 73.</li> <li>Perform a road test to verify the repair.</li> <li>Generate readiness code. Refer to ⇒</li> </ul>

Fuel System Mechanical Testing

Check the following items for possible mechanical delivery deficiency:

Fuel level in tank is too low.

"nes pinched.

"ad.

"noriate repair man-

- Vacuum leaks check for failed or loose vacuum lines, leaking intake gaskets, or any other source of un-metered air leaks (leaks after the Mass Air Flow Sensor).
- Restricted fuel filter or bent/pinched fuel system lines.
- Incorrect input from other sensors, such as the Mass Air Flow Sensor, which may not always set a fault.
- Engine misfire.
- Exhaust leaks.
- Camshaft timing.

#### Common issues for rich faults:

- Leaking or faulty fuel injector.
- Fuel injector driver shorted in ECM, or wiring short for injectors (short to ground).

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- Leaking or faulty fuel pressure regulator or restricted return line.
- Faulty fuel pump or fuel pump driver module.
- Incorrect input from other sensors, such as the Mass Air Flow Sensor, which may not always set a fault.
- Aftermarket components or performance chips.
- Camshaft timing.

#### **Readiness Code** 3.2



#### Caution

When performing the Readiness drive cycle operation, pay strict attention to driving conditions and observe and obey all posted speed limits.







#### Readiness code description

Diagnostics are performed at regular intervals during normal vehicle operation. After repairing an emissions related system, a readiness code is generated by road testing the vehicle.

If a malfunction is recognized during the drive cycle, it will be stored in the DTC memory.

The OBD drive cycle operation will be monitored with a hand held diagnostic tool. Consult the manufacturer's instruction manual for correct tool operation.

The readiness code is erased every time the DTC memory is erased or any time the battery is disconnected. If the DTC memory has been erased or the battery is disconnected, a new readiness code must be generated.

Only erase the DTC memory if a DTC has been stored.

#### General recommendations

#### Operating conditions



#### Note

#### Test requirements

- NO DTC in memory.
- Switch OFF all electrical and electronic accessories.
- Necessary driving speed: 50 70 mph.
- Drive profile takes approximately 60 90 min.

### Readiness Drive Cycle Procedure

Only erase the DTC memory if a DTC has been stored.									
General recommendations									
Most monitors will complete easier and quicker using a "steady- foot" and "smooth" acceleration during the drive cycle operation, cruise, and acceleration modes.  Operating conditions									
Opera	ting conditions	· guarante							
For the bient a differe tempe cycle p	For the EVAP monitor test, the coolant temperature and the ambient air temperature must be between 10° C and 35° C with a difference between them no greater than 4° C. The ambient air temperature must not change more than 4° C during the drive cycle procedure (e.g. when driving out of a heated workshop in the winter).								
$oldsymbol{i}$	Note Wije	spectt							
rect if	t assume that the scan tool ID and engine code and the scan tool communicates. The scan tool does not to establish communication—the units are automatical.	e cor- not use atically							
Test re	equirements	of ir							
• NO	DTC in memory.	form							
• Sw	itch OFF all electrical and electronic accessories.	ation							
• Ne	cessary driving speed: 50 – 70 mph.	in the							
• Dri	ve profile takes approximately 60 – 90 min.	in State of the St							
Readi	ness Drive Cycle Procedure	·ligan							
- CO	NNECT: Scan Tool. 1401	6 Karufindo S							
Step	Procedure Papago	Result / Action to Take							
1	Activate Monitors:  START: Engine and idle for 2 – 3 min.	♦ Monitoring Active.							
	START. Engine and idle for 2 – 3 min.	◆ Executes Misfire Monitoring.							
2	O2 Sensor Monitoring:	◆ Executes O2 Sensor Monitoring.							
	DRIVE: Vehicle at 45 – 55 mph for a continuous 7 minute period. Avoid stopping.	◆ Executes Fuel Trim Monitoring.							
		◆ Executes EVAP Monitoring.							
3	Fuel Cut-Off Monitoring:  • ACCELERATE: Vehicle to an engine speed of 5,000 RPM; lift off the throttle until the engine speed is around 1,200 RPM.	◆ Fuel Cut-Off Monitoring Ready.							



Step	Procedure	Result / Action to Take
4	Catalyst Monitoring:	◆ Executes Catalyst Monitoring.
	AČCELERATE: Vehicle smoothly to 60 – 65 mph, cruise at a constant speed for 5 min.	◆ Executes O2 Sensor Monitoring.
		◆ Executes Fuel Trim Monitoring.
		◆ Executes Misfire Monitoring.
		◆ Executes EVAP Monitoring.
5	Secondary Air Injection, EVAP Monitoring:  • DRIVE: Vehicle for 30 – 40 min. at a constant	◆ Executes Secondary Air Injection Monitoring.
	speed of 50 – 70 mph in high gear for 2 min	◆ Executes EVAP Monitoring.
	with no coasting.	Check the status of the readiness code.



- Depending on the scan tool used, the readiness code status

#### Readiness Codes and Monitoring Completed

- 2 -
- 3 -
- 4 -
- 6 -

## 3.3

tor fails the dil all engine mapassed.

ling the drive cycle operation for a fau.

Inmostat monitor, allow the engine to coon

temperature and the ambient air temperature.

O'' C and 35" C with a difference between them.

In an 4" C and then repeat the drive cycle operation.

Ing on the scan tool used, the readiness code status displayed as complete, passed or OK. At an ambient operature < 7" C, the setting of the readiness for the statistic converter test is delayed. Here the vehicle be driven considerably longer.

The sess Codes and Monitoring Completed

If any engine monitor fails the drive cycle test, repeat the drive cycle test until all engine monitors have successfully run through and passed.

If the drive cycle operation fails again:

"ke the DTC memory for stored DTCs.

"he vehicle if necessary.

"tive cycle operation until all engine monitors "ly run through and passed.

"I through 09 displays the that may be monitored, stored DTC trouble verate readiness "s used within the rad component.

3. Diagnosir The information provided in Modes 01 through 09 displays the various levels of emission related data that may be monitored, as well as the ability to retrieve and read stored DTC trouble codes, erase stored DTC trouble codes, generate readiness codes, and select the various PIDs and Test-IDs used within the modes to monitor the engine, and emission related component parameters.

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#### Note

Depending on scan tool and protocol used, the information in diagnostic mode 01 may be referred to by different names such as Test-ID (TID), Hex-ID, Component-ID (CID), or On-Board Diagnostic Monitor Identifier (OBDMID).

- ⇒ M3.3.1 ode 01 Read Current System Data", page 18
- ⇒ M3.3.2 ode 02 Read Operating Conditions", page 19
- ⇒ M3.3.3 ode 03 Read DTC Memory", page 21
- ⇒ M3.3.4 ode 04 Erase DTC Memory", page 22
- ⇒ M3.3.5 ode 05 Read Oxygen Sensor Monitoring Test Results", page 23
- ⇒ M3.3.6 ode 06 Read Test Results for Specific Diagnostic Functions, 2010 MY", page 23
- ⇒ M3.3.7 ode 06 Read Test Results for Specific Diagnostic Functions, 2011 MY", page 33
- ⇒ M3.3.8 ode 06 Read Test Results for Specific Diagnostic Functions, 2012 MY", page 42
- ⇒ M3.3.9 ode 06 Read Test Results for Specific Diagnostic Functions, 2013 MY", page 51
- $\Rightarrow$  M3.3.10 ode 06 Read Test Results for Specific Diagnostic Functions, 2014 MY", page 60
- ⇒ M3.3.11 ode 07 Read Faults Detected During the Current or Last Driving Cycle", page 70
- ⇒ M3.3.12 ode 08 Request Control of On-Board System, Test or Component", page 71
- ⇒ M3.3.13 ode 09 Read Vehicle Information", page 71
- ⇒ M3.3.14 ode 0A Check Permanent DTC Memory", page

#### 3.3.1 Diagnostic Mode 01 – Read Current System Data



#### Note

Jiagnostic

fic Diagnos
ing the Cur
yoard System,

nage 71

"", page Depending on the scan tool and protocol used, the information in diagnostic mode 01 may be referred to by different names such as Test-ID (TID), Hex-ID, Component-ID (CID), or On-Board Diagnostic Monitor Identifier (OBDMID).

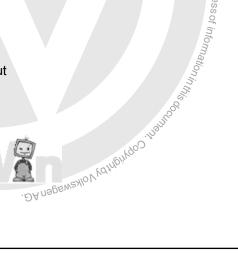
Diagnostic Mode 01 makes it possible to access current emissions-related measured values and diagnostic data. The original measured values (no replacement values), input and output data and system status information are displayed using Diagnostic Mode 01. st requirement

Coolant temperature at least 80°C.

#### Test requirement

#### **Procedure**

- Start the engine and run at idle.







- Select "Diagnostic Mode 01: Obtain data".
- From the following table, select the desired "PID" that is to be monitored, e.g. "PID 05 Coolant Temperature".

The current values of the component or system that is being monitored will be displayed on the scan tool screen.

PID	Component or System
\$01:	Monitoring Status Since Erasing DTC Memory
\$03:	Condition Of Fuel System
\$04:	Calculated Load Value
\$05:	Coolant Temperature
\$06:	Short Term Air Fuel Ratio
\$07:	Long Term Air Fuel Ratio KSWagen AG. Volkswagen AG does not
\$0B:	Intake Manifold Absolute Pressure
\$0C:	Engine RPM catholic
\$0D:	Vehicle Speed
\$0E:	Ignition Timing Advance For #1 Cylinder
\$0F:	Intake Air Temperature
\$11:	Absolute Throttle Position
\$12:	Secondary Air Injection
\$13:	Oxygen Sensor Bank 1 Sensor 1
\$15:	Oxygen Sensor Bank 1 Sensor 2
\$16:	Oxygen Sensor Bank 1 Sensor 3
\$1F:	Time Since Engine Start
\$21:	Distance Driven With MIL On
\$2E:	Commanded Evap Purge
\$30:	Warm Up Counts After MIL Erased
\$31:	Distance Driven After Erasing DTC Memory
\$33:	Barometric Pressure
\$34:	Heater Current Bank 1 Sensor 1
\$3C:	Calculated Catalyst Temperature
\$41:	Monitor Status Current Drive Cycle
\$42:	Control Module Voltage
\$43:	Absolute Load Value
\$44:	
\$45:	Relative Throttle Valve Position
\$46:	Ambient Temperature
\$47:	Absolute Throttle Valve Position B
\$49:	Accelerator Pedal Position D
\$4A:	Accelerator Pedal Position E
\$4C:	Specified Throttle Valve Position
\$56:	Long Term Secondary O2 Sensor Fuel Trim Bank 1

- Switch the ignition off.

## 3.3.2 Diagnostic Mode 02 – Read Operating Conditions

When an emissions-related fault (pending DTC, visible in mode 07) is first detected, operating conditions are stored. Diagnostic

#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Mode 02 makes it possible to access this freeze frame data as soon as this fault is shown in Diagnostic Mode 03. Each control module only shows freeze frame data for one fault via Diagnostic Mode 02. Therefore, there are two priority levels. If there is a malfunction with higher priority, the freeze frame data is overwritten.

- Fault with higher priority: Misfire malfunction or fuel trim malfunction.
- Fault with normal priority: All other emissions-related faults.



#### Note

#### **Procedure**

- Connect the scan tool.
- Start the engine and run at idle.



#### Note

- Select "Diagnostic Mode 02: Obtain operating conditions".
- From the following table, select the desired "PID", e.g. "PID 05 Coolant Temperature" that is to be monitored.

Depending on scan tool and protocol used, the information in Diagnostic Mode 02 may be referred to by different names such as Test-ID (TID), Hex-ID, Component-ID (CID), or On-Board Diagnostic Monitor Identifier (OBDMID).							
Procedure							
- Connect the scan tool.							
- Start the engine and run at idle.							
Ŭ	, thoriso						
Note	Striff Sect Of Trace Of the Section						
least 5 seconds, do not swit							
9,	02: Obtain operating conditions".						
<ul> <li>From the following table,</li> <li>05 Coolant Temperature</li> </ul>	select the desired "PID", e.g. "PID" that is to be monitored.						
The current values of the comonitored will be displayed	mponent or system that is being on the scan tool screen.						
PID Sod	Component or System						
\$02: nd	DTC Which Triggered Freeze Frame Data						
\$03:	Fuel System Status						
\$04:	Calculated Load Value						
\$05:	Engine Coolant Temperature						
\$06:	Short Term Air Fuel Ratio						
\$07: Long Term Air Fuel Ratio							
\$0B: Intake Manifold Absolute Pressure							
<u> </u>	* 67						
<u> </u>	Intake Manifold Absolute Pressure Engine RPM						
\$0B:	Intake Manifold Absolute Pressure Engine RPM						
\$0B: \$0C:	Intake Manifold Absolute Pressure Engine RPM						
\$0B: \$0C: \$0D:	Intake Manifold Absolute Pressure Engine RPM Vehicle Speed						
\$0B: \$0C: \$0D: \$0E:	Intake Manifold Absolute Pressure  Engine RPM  Vehicle Speed						
\$0B: \$0C: \$0D: \$0E: \$0F:	Intake Manifold Absolute Pressure Engine RPM  Vehicle Speed Application For #1 Cylinder  Intake Air Temperature						
\$0B: \$0C: \$0D: \$0E: \$0F: \$11:	Intake Manifold Absolute Pressure  Engine RPM  Vehicle Speed   Ignition Timing Advance For #1 Cylinder  Intake Air Temperature  Absolute Throttle Valve Position						
\$0B: \$0C: \$0D: \$0E: \$0F: \$11: \$12:	Intake Manifold Absolute Pressure Engine RPM  Vehicle Speed Ignition Timing Advance For #1 Cylinder  Intake Air Temperature  Absolute Throttle Valve Position  Secondary Air Injection						
\$0B: \$0C: \$0D: \$0E: \$0F: \$11: \$12: \$1F:	Intake Manifold Absolute Pressure Engine RPM  Vehicle Speed Ignition Timing Advance For #1 Cylinder  Intake Air Temperature Absolute Throttle Valve Position Secondary Air Injection Time Since Engine Start						
\$0B: \$0C: \$0D: \$0E: \$0F: \$11: \$12: \$1F: \$2E:	Intake Manifold Absolute Pressure Engine RPM  Vehicle Speed Ignition Timing Advance For #1 Cylinder  Intake Air Temperature Absolute Throttle Valve Position  Secondary Air Injection  Time Since Engine Start  Commanded Evap Purge						
\$0B: \$0C: \$0D: \$0E: \$0F: \$11: \$12: \$1F: \$2E: \$33:	Intake Manifold Absolute Pressure Engine RPM  Vehicle Speed Report of the Properties						
\$0B: \$0C: \$0D: \$0E: \$0F: \$11: \$12: \$1F: \$2E: \$33: \$42:	Intake Manifold Absolute Pressure Engine RPM Vehicle Speed Ignition Timing Advance For #1 Cylinder Intake Air Temperature Absolute Throttle Valve Position Secondary Air Injection Time Since Engine Start Commanded Evap Purge Barometric Pressure Control Module Voltage						

$\bigotimes$
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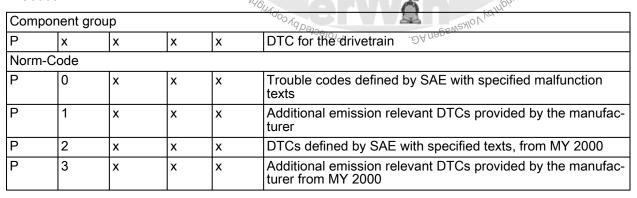
	D	Component or System				
\$4	5: Rela	tive Throttle Valve Position				
\$4	6: Ambi	ient Temperature				
\$47: Absolute Throttle Valve Position B						
\$4	9: Acce	elerator Pedal Position D				
\$4,	A: Acce	elerator Pedal Position E				
\$4C: Specified Throttle Valve Position						
\$5	6: Long	Term Secondary O2 Sensor Fuel Trim Bank 1				
3.3.3 D M	iagnostic Mode lemory	e 03 – Read DTC				
Diagnostic Mo	de 03 makes it poss ed DTCs; faults whi	sible to read emissions-related ich have activated the MIL) in				
he ECM and i						
consecutive dr cluster over the f an electronic send a reques	ive cycles, it sends e CAN to turn on the throttle malfunction	nissions-related fault in two a request to the instrument ue malfunction indicator lamp. In is recognized, the ECM will cluster over the CAN to turn on ing lamp.				
The DTCs are	sorted by SAE code alphanumeric value	le with the DTC tables consist-				
ng of a 5-digit	90	ine.				
ng of a 5-digit	srcialpurpos	tness of Infon				
ng of a 5-digit  Note  Depending on	the scan tool and pormation provided n	protocol used, diagnostic mode may be referred to by a differ-				
Note  Note  Depending on one on the information of	ables provided n	protocol used, diagnostic mode may be referred to by a differ-				
Note  Depending on 3 and the infoent name.  The following t	ables provided n	protocol used, diagnostic mode may be referred to by a differ-				

#### 3.3.3 Diagnostic Mode 03 - Read DTC Memory



#### Note

#### **P-Codes**



Component group						
Repair	Repair group					
P x 0 x Fuel and air mixture and additional emission regulations						
P x 1 x x Fuel and air ratios						
Р	х	2	х	х	Fuel and air ratios	



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Р	x	3	x	x	Ignition system
Р	х	4	х	х	Additional exhaust system
Р	х	5	х	х	Speed and idle control
Р	х	6	х	х	Control module and output signals
Р	х	7	х	х	Transmission
Р	х	8	х	х	Transmission
Р	х	9	х	х	Control modules, input and output signals

#### **U-Codes**

Component group							
U	х	х	х	х	DTC for network (CAN bus)		
Norm-0	Norm-Code						
U	0	х	х	х	Trouble codes defined by SAE with specified malfunction texts		

#### **Procedure**

- Connect the scan tool.
- Switch the ignition to the ON position.

Switch the ignition.

Select Diagnostic Mode 03: Interrogating raunt me....

The stored DTC or DTCs will be displayed on the scan tool coreen.

The stored DTC or DTCs will be displayed on the scan tool coreen.

The DTC information that The following table is an example of the DTC information that may be displayed on the scan tool screen:

Indication example	Explanation						
P0444	SAE Diagnostic Trouble Code						
Evaporative emission canister purge regulator valve	Malfunctioning wiring path or malfunctioning component						
Circuit open	Malfunction type as next						
Circuit open  Malfunction type as next  Refer to the DTC tables below for the diagnostic repair procedures.  ⇒ E3.4.1 ngine/Motor Control Module, 2010 MY", page 74  ⇒ E3.4.2 ngine/Motor Control Module, 2011 MY", page 185  ⇒ E3.4.3 ngine/Motor Control Module, 2012 MY", page 301  ⇒ E3.4.4 ngine/Motor Control Module, 2013 MY", page 418  ⇒ E3.4.5 ngine/Motor Control Module, 2014 MY", page 535  Switch the ignition off.  3.3.4 Diagnostic Mode 04 — Erase DTC  Memory  Diagnostic Mode 04 makes it possible to erase the DTC memory and to reset all emissions-related diagnostic data. In that way, all faults in the DTC memory in the ECM and TCM are erased. The adaptation values may also be reset.  Emissions-related diagnostic data includes (as applicable):							
◆ ⇒ E3.4.2 ngine/Motor Control Module, 2011	MY", page 185						
◆ ⇒ E3.4.3 ngine/Motor Control Module, 2012	MY", page 301						
♦ ⇒ E3.4.4 ngine/Motor Control Module, 2013	BMY", page 418						
◆ ⇒ E3.4.5 ngine/Motor Control Module, 2014	MY", page 535						
- Switch the ignition off.							
3.3.4 Diagnostic Mode 04 – Erase DTC  Memory							
Diagnostic Mode 04 makes it possible to erase the DTC memory and to reset all emissions-related diagnostic data. In that way, all faults in the DTC memory in the ECM and TCM are erased. The adaptation values may also be reset.							
Emissions-related diagnostic data includes (as applicable):							
Rep. Gr.ST - Generic Scan Tool							

- Refer to the DTC tables below for the diagnostic repair procedures.
- ⇒ E3.4.1 ngine/Motor Control Module, 2010 MY", page 74
- ⇒ E3.4.2 ngine/Motor Control Module, 2011 MY", page 185
- ⇒ E3.4.3 ngine/Motor Control Module, 2012 MY", page 301
- ⇒ E3.4.4 ngine/Motor Control Module, 2013 MY", page 418
- ⇒ E3.4.5 ngine/Motor Control Module, 2014 MY", page 535
- Switch the ignition off.

#### Diagnostic Mode 04 - Erase DTC 3.3.4 Memory



- MIL Status
- Number of DTCs
- Readiness bits
- ◆ Confirmed DTCs
- Pending DTCs
- ◆ DTC that belongs to freeze frame
- Freeze frame data
- Test results of specific diagnostic functions
- ◆ Distance driven with MIL on
- Number of warm-up cycles after erasing the DTC memory
- ◆ Distance driven after erasing the DTC memory
- ◆ Misfire counter



#### Note

Depending on scan tool and protocol used, diagnostic mode 04 and the information provided may be referred to by a different name.

#### **Procedure**

- Connect the scan tool.
- Switch the ignition on AG. Volkswagen AG does no
- Select Diagnostic Mode 03: Interrogating fault memory.
- Then select Diagnostic Mode 04: Reset/delete diagnostic data.

The scan tool will display "Diagnostic data being erased".

- Switch the ignition off.

## 3.3.5 Diagnostic Mode 05 – Read Oxygen Sensor Monitoring Test Results



commercial purposes, in part or in whole

#### Note

Mode 05 may not be supported on all systems. On systems where Diagnostic Mode 05 is not supported, refer to Diagnostic Mode 6 for oxygen sensor monitoring test results.

#### **Test Requirements**

No Test requirements are available for this powertrain.

#### Function Test

No Function Tests are available for this powertrain.

# 3.3.6% Diagnostic Mode 06 – Read Test Results for Specific Diagnostic Functions, 2010 MY

Diagnostic Mode 06 makes it possible to retrieve test results for special components and systems which are continuously or not continuously monitored. If the diagnosis of a system is complete, the diagnostic result and the corresponding thresholds are saved and displayed in mode 06. This data remains saved



(even with the ignition off) until either new diagnostic results become available or the DTC memory is erased.

The min & max values for each individual test in Mode 06 represent the min & max operating values for a properly operating system. This data is provided to the individual aftermarket scan tool companies for development of their scan tool. Depending on the scan tool being used, the min & max values shown may vary, or be rounded up or down to the nearest decimal point depending on the aftermarket scan tool company's development process.

For example; GST manual documentation will show the value as 0.3499 (units) while the scan tool will display the same value as 0.35 (units).

Depending on the scan tool and protocol used, the information displayed in Diagnostic Mode 06 may be referred to by different names such as Test-ID (TID), Hex-ID, Component-ID (CID), On-Board Diagnostic Monitor Identifier (OBDMID), or contain no name at all and may be referenced by only a number.

#### **Test requirements**

- ed between.

  AG. Volkswagen AG does not guarantee or accept and less of accept and less or accept and less o Exhaust system must be properly sealed between the catalytic converter and the cylinder heads.
- No DTCs stored in the DTC memory.
- Coolant temperature at least 80° C.

#### Work procedure

- Connect the scan tool.
- Start the engine and let run at idle speed.
- Select Diagnostic Mode 06: Check / test the results of components that are not continuously monitored.

Select the desired Test-ID.

The current minimum and maximum values will be displayed on the scan tool screen.

The following table is a numerical list of all "Test-IDs" that may be selected.

80	ln Θ
Monitor-ID	Component or System
ু \$01: <u>⇒ page 25</u>	Oxygen Sensor Monitor Bank 1 – Sensor 1
\$02: <u>⇒ page 25</u>	Oxygen Sensor Monitor Bank 1 – Sensor 2
\$03: ⇒ page 26	Oxygen Sensor Monitor Bank 1 Sensor 3
% \$21: <u>⇒ page 26</u>	Catalytic Converter Monitoring
\$35: <u>⇒ page 27</u>	VVT Monitor Response Time/Target Error
\$3B <sub>2</sub> <u>page 27</u>	Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm).
\$3C: <u>⇒ page 28</u> \$3D: ⇒ page 28	Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)
\$3D: <u>⇒ page 28</u>	EVAP Purge Flow Monitor
\$41: <u>⇒ page 28</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 1
\$42: <u>⇒ page 29</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 2
\$43: <u>⇒ page 29</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 3
\$71: <u>⇒ page 30</u>	Secondary Air Monitor
\$A2: <u>⇒ page 30</u>	Misfire Cylinder 1 Data
\$A3: <u>⇒ page 31</u>	Misfire Cylinder 2 Data
\$A4: <u>⇒ page 31</u>	Misfire Cylinder 3 Data



Monitor-ID	Component or System
\$A5: <u>⇒ page 32</u>	Misfire Cylinder 4 Data
\$A6: <u>⇒ page 32</u>	Misfire Cylinder 5 Data

### Monitor-ID \$01: Oxygen Sensor Monitor Bank 1 - Sensor 1

- Connect the scan tool.
- Start the engine and run at idles
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$01".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$83	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. page
\$84	P2195	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2195 in the DTC summary table. page
\$84	P2196	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2196 in the DTC summary table. ⇒ page
\$89	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. ⇒ page 99

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

### Monitor-ID \$02: Oxygen Sensor Monitor Bank 1 – Sensor 2

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$02".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81		Minimum Voltage Threshold From Rich To Lean.	0.0 V		Refer to DTC P2271 in the DTC summary table. ⇒ page 169
\$82	P2270	Maximum Voltage Threshold From Lean To Rich.	0.5980 V		Refer to DTC P2270 in the DTC summary table. ⇒ page 168



#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$8A	P2271	O2 Sensor Minimal Voltage Bank 1 Sensor 2.	0.0 V		Refer to DTC P2271 in the DTC summary table. ⇒ page 169

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure 

  M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$03: Oxygen Sensor Monitor Bank 1 – Sensor 3

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$03".

- Select the desired "Test-ID".
- Check specified values at idle.

		A G. Volkswagen A S			
Test-ID	DTC	Component or System	Minkama	genMax.	Additional Information
\$81	P2275	Minimum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	<sub>s</sub> e <sup>0</sup> 0.0 V	0.8018 V	Refer to DTC P2275 in the DTC summary table page 172
\$82	P2274	Maximum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	0.5980 V	1.1306 V	Refer to DTC P2274 in the DTC summary table. ⇒ page 171
\$8A	P2275	O2 Sensor Minimum Voltage Bank 1 Sensor 3.	0.0 V	0.1500 V	Refer to DTC P2275 in the DTC summary table. ⇒ page 172

- If any of the components or systems fail to meet the specified values, refer to Diagnostic Mode 03: Interrogating Fault Memory" to check for stored DŢCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$21: Oxygen Storage Content of Catalyst

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored". Protected by copyright Co

#### Select "Monitor-ID \$21".

- Select the desired "Test-ID".
- Check specified values at idle.

Select "Monitor-ID \$21".  Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored."  Select "Monitor-ID \$21".  Select "DTC Component or System Min. Max. Additional Information DTC Summary table. ⇒ page			8			171 B				
fied values, refer to Diagnostic. Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.  Switch the ignition off.  Monitor-ID \$21: Oxygen Storage Content of Catalyst  Connect the scan tool.  Start the engine and run at idle.  Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$21".  Select the desired "Test-ID".  Check specified values at idle.  Test-ID DTC Component or System Min. Max. Additional Information \$84 P0420 Oxygen Storage Content Value 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. ⇒ page	\$8A	P2275	O2 Sensor Minimum Voltage Bank 1 Sensor 3.	0.0 V	0.1500 V	DTC summary table - nage				
\$84 P0420 Oxygen Storage Content Value 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. > page	<ul> <li>If any of the components or systems fail to meet the specified values, refer to Diagnostic Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.</li> <li>Switch the ignition off.</li> <li>Monitor-ID \$21: Oxygen Storage Content of Catalyst</li> </ul>									
\$84 P0420 Oxygen Storage Content Value 0f Catalyst. 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. page	- Con	nect the	scan tool.			on in.				
\$84 P0420 Oxygen Storage Content Value 0f Catalyst. 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. > page	- Star	t the eng	ine and run at idle.							
\$84 P0420 Oxygen Storage Content Value 0f Catalyst. 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. > page	- Sele	ct "Diagr ents that	are not continuously monitored".			O Halles				
\$84 P0420 Oxygen Storage Content Value 0f Catalyst. 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. > page	Select "	Monitor-	ID \$21".	Susa		S CAMPINAL				
\$84 P0420 Oxygen Storage Content Value 0f Catalyst. 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. > page	- Select the desired "Test-ID".									
\$84 P0420 Oxygen Storage Content Value Of Catalyst. 100.0% 655.35% Refer to DTC P0420 in the DTC summary table. > page	- Check specified values at idle.									
Of Catalyst. DTC summary table. <u>⇒ page</u>	Test-ID	DTC	Component or System	Min.	Max.	Additional Information				
	\$84	P0420		100.0%	655.35%					





- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTGs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

### Monitor-ID \$35: Variable Valve Timing Monitor

- Connect the scan tool.
- Start the engine and run at idle
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

- Select the desired "Test-ID".
- Check specified values at idle.

<ul> <li>Switch the ignition off.</li> <li>Monitor-ID \$35: Variable Valve Timing Monitor</li> <li>Connect the scan tool.</li> <li>Start the engine and run at idle</li> <li>Select "Diagnostic Mode 06: Check / test the results of com-</li> </ul>	and liability with respect to the correctness of information in this object.							
<ul> <li>Connect the scan tool.</li> <li>Start the engine and run at idle</li> <li>Select "Diagnostic Mode 06: Check / test the results of com-</li> </ul>	corre							
<ul> <li>Start the engine and run at idle</li> <li>Select "Diagnostic Mode 06: Check / test the results of com-</li> </ul>	ectne							
- Select "Diagnostic Mode 06: Check / test the results of com-	SS Of							
ponents that are not continuously monitored".	informal							
Select "Monitor-ID \$35".	Tionin							
- Select the desired "Test-ID".	This of							
- Check specified values at idle.								
Test-ID DTC Component or System Min. Max. Additional Information								
\$80 P0011 Target Error Intake Bank 1. P0011 Target Error Intake Bank 1. Refer to DTC P0011 in the DTC summary table. ⇒ pag	<u>e</u>							
\$81 P000 Slow Response Intake Bank 1 14.25 28.0 Refer to DTC P000A in the DTC summary table. ⇒ pag	<u>e</u>							

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$3B: Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm)

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$3B".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$86	P0442	Fuel Tank Leak Test: Small Leak.	900.0 Pa		Refer to DTC P0442 in the DTC summary table. ⇒ page 135

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC <u>Memory", page 21</u> .
- Switch the ignition off.



#### Monitor-ID \$3C: Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3C".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P0456	Fuel Tank Leak Test: Very Small Leak.	5,800.0 ms		Refer to DTC P0456 in the DTC summary table. ⇒ page 138
\$82		EVAP Monitor System Ok By Initial Purge Check.	29.8 g	6,553.5 g	
\$84	P0456	Fuel Tank Leak Test: Very Small Leak (CBUA).	0.0	0.170	Refer to DTC P0456 in the DTC summary table. ⇒ page 138

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC - Read DTC

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  - Read Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$3D: EVAP Purge Flow Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

### Select "Monitor-ID \$3D".

- Select the desired "Test-ID".
- Check specified values at idle.

	ect the	scan tool.	1055			CO.	
- Start the engine and run at idle.							
Soloet "Diagnostic Mode 06: Chook / toot the regults of com							
<ul> <li>Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".</li> </ul>							
Select "Monitor-ID \$3D".							
Selec	t the de	ID \$3D".				ectt	
Chec	k specif	ied values at idle.				otheco	
Test-ID	DTC	Component or System	Min.	Max.	Additional Information	orrec	
\$8D	P0441	Purge Flow Monitor Valve Closed.	0.0 mA	36.3 mA	Refer to DTC P0441 in the DTC summary table. ⇒ page 134	tness of ir	
- Connect the scan tool.  - Start the engine and run at idle.  - Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$3D".  - Select the desired "Test-ID".  - Check specified values at idle.    Test-ID   DTC   Component or System   Min.   Max.   Additional Information							
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- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 € Read DTC Memory", page 21
- Switch the ignition off.

# Monitor-ID \$41: Oxygen Sensor Heater Monitor Bank 1 – Sen

- Connect the scan tool.
- Start the engine and run at idle.







Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$41".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$85		Oxygen Sensor Ceramic Temperature Bank 1 Sensor 1 Monitoring.	715° C		Refer to DTC P0135 in the DTC summary table. ⇒ page 100

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding fied values, ...

  Memory" to check to: sac diagnostic repair procedure ⇒ IVIO.c.

  Memory", page 21

  - Switch the ignition off.

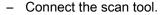
  Monitor-ID \$42: Oxygen Sensor Heater Monitor Bank 1 Sen≠olkswagen AG does not guarantee or account of the scan tool.

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81		Oxygen Sensor Heating Internal Resistance Test Bank 1 Sensor 2.	0.0 Ω		Refer to DTC P0141 in the DTC summary table. ⇒ page 107

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure M3.3.3 ode 03 - Read DTC Memory", page 21.
- Switch the ignition off.

## Monitor-ID \$43: Oxygen Sensor Heater Monitor Bank 1 - Sen-Protected by copyright,



- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$43".

- Select the desired "Test-ID".
- Check specified values at idle.





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	Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022							
Test-ID	DTC	Component or System	Min.	Max.	Additional Information			
\$81		Oxygen Sensor Heating Bank 1 Sensor 3 Internal Resistance Test.	0.0 Ω	32.4 kΩ	Refer to DTC P0147 in the DTC summary table. ⇒ page 114			
Mem diagr Mem – Swite	If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.  Switch the ignition off.  Monitor-ID \$71: Secondary Air Monitor  Connect the scan tool.  Start the engine and run at idle.  Select "Diagnostic Mode 06: Check / test the results of com-							
- Gonr	ect the	scan tool.			spec			
– Start	the eng	ine and run at idle.			ttoth			
- Selec	Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".							
Select "I	Select "Monitor-ID \$71".							
- Selec	Select the desired "Test-ID".							
- Chec	Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$71".  Select the desired "Test-ID".  Check specified values at idle.							

### Monitor-ID \$71: Secondary Air Monitor

#### Select "Monitor-ID \$71".

- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	S Additional Information
\$82 3	P0491	Blockage/Leakage Check Bank 1.	0.500		Refer to DTC P0491 in the DTC summary table. <u>⇒ page</u> 140
\$84	٠٠٠	Pressure Pulsation Check Bank	0.148 kPa	<sub>õund</sub> okPa	Refer to DTC P0491 in the DTC summary table. <u>⇒ page</u> 140
\$85	P0410	Pressure Check Bank 1.	0.0 kPa	5,000.0 kPa	Refer to DTC P0410 in the DTC summary table. ⇒ page 130
\$8A	P2240	Tightness Check Bank 1.	0.0	1.352	Refer to DTC P2440 in the DTC summary table. ⇒ page 180

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

### Monitor-ID \$A2: Mis-Fire Cylinder 1 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A2".

- Select the desired "Test-ID".
- Check specified values at idle.



Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B	P0301	Cylinder 1 Data Averaged During Last 10 Drive Cycles.	0.0 counts		Refer to DTC P0301 in the DTC summary table. ⇒ page 119
\$0C	P0301	Cylinder 1 Data Averaged During Current Drive Cycle.	0.0 counts		Refer to DTC P0301 in the DTC summary table. ⇒ page 119

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure 

  M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A3: Mis-Fire Cylinder 2 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A3".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B	P0302	Misfire Cylinder 2, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0302 in the DTC summary table. ⇒ page 120
\$0C		Misfire Cylinder 2, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0302 in the DTC summary table. ⇒ page 120
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- does not guaran If any of the components or systems fail to meet the specified values refer to Diagnostic "Mode 03: Interrogating Fault" Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A4: Mis-Fire Cylinder 3 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

### Select "Monitor-ID \$A4".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information	
\$0B	P0303	Misfire Cylinder 3, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0303 in the DTC summary table. <u>⇒ page</u> 121	
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#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0C		Misfire Cylinder 3, In This Driving Cycle.	0.0 counts		Refer to DTC P0303 in the DTC summary table. ⇒ page 121

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure 

  M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

### Monitor-ID \$A5: Mis-Fire Cylinder 4 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of com-

#### Select "Monitor-ID \$A5".

- :	Start	the eng	ine and run at idle.						
	<ul> <li>Select "Diagnostic Mode 06: Check / test the results of com- ponents that are not continuously monitored".</li> </ul>								
Sel	ect "N	/lonitor-	ID \$A5".						
_	Selec	t the de	esired "Test-ID".						
-	<ul> <li>Check specified values at idle.</li> </ul>								
Те	st-ID	DTC	Component or System	Min.	Max.	Additional Information			
\$	0B	P0304	Misfire Cylinder 4, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0304 in the DTC summary table. ⇒ page 122			
\$	OC	P0304	Misfire Cylinder 4, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0304 in the DTC summary table. ⇒ page 122			
- Mo	Select "Monitor-ID \$A6".  Select the desired "Test-ID".  Check specified values at idle.    Test-ID   DTC   Component or System   Min.   Max.   Additional Information								
Те	st-ID	DTC	Component or System	Min.	Max.	Additional Information	)form		
\$	60B	P0305	Misfire Cylinder 5, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page 124	ation in this		
\$	OC	P0305	Misfire Cylinder 5, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page			

#### Monitor-ID \$A6: Mis-Fire Cylinder 5 Data

#### Select "Monitor-ID \$A6".

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B	P0305	Misfire Cylinder 5, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page 124
\$0C	P0305	Misfire Cylinder 5, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page
			146MODYNIGH	erv	The west of Vear Horizon
<u> </u>				Protect	.DA NODEL.



- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

## 3.3.7 Diagnostic Mode 06 – Read Test Results for Specific Diagnostic Functions, 2011 MY

Diagnostic Mode 06 makes it possible to retrieve test results for special components and systems which are continuously or not continuously monitored. If the diagnosis of a system is complete, the diagnostic result and the corresponding thresholds are saved and displayed in mode 06. This data remains saved (even with the ignition off) until either new diagnostic results become available or the DTC memory is erased.

The min & max values for each individual test in Mode 06 represent the min & max operating values for a properly operating system. This data is provided to the individual aftermarket scan tool companies for development of their scan tool. Depending on the scan tool being used, the min & max values shown may vary, or be rounded up or down to the nearest decimal point depending on the aftermarket scan tool company's development process.

For example; GST manual documentation will show the value as 0.3499 (units) while the scan tool will display the same value as 0.35 (units).

Depending on the soan tool and protocol used, the information displayed in Diagnostic Mode 06 may be referred to by different names such as Test-ID (TID), Hex-ID, Component-ID (CID), On-Board Diagnostic Monitor Identifier (OBDMID), or contain no name at all and may be referenced by only a number.

#### Test requirements

- Exhaust system must be properly sealed between the catalytic converter and the cylinder heads.
- No DTCs stored in the DTC memory.
- Coolant temperature at least 80° C.

#### Work procedure

- Connect the scan tool.
- Start the engine and let run at idle speed.
- Select Diagnostic Mode 06: Check / test the results of components that are not continuously monitored.

Select the desired Test-ID.

The current minimum and maximum values will be displayed on the scan tool screen.

The following table is a numerical list of all "Test-Ds" that may be selected.

Monitor-ID	Component or System
\$01: <u>⇒ page 34</u>	Oxygen Sensor Monitor Bank 1 – Sensor 1
\$02: <u>⇒ page 34</u>	Oxygen Sensor Monitor Bank 1 – Sensor 2
\$03: <u>⇒ page 35</u>	Oxygen Sensor Monitor Bank 1 – Sensor 3

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Monitor-ID	Component or System
\$21: <u>⇒ page 36</u>	Catalytic Converter Monitoring
\$35: <u>⇒ page 36</u>	VVT Monitor Response Time/Target Error
\$3B: <u>⇒ page 36</u>	Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm)
\$3C: <u>⇒ page 37</u>	Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)
\$3D: <u>⇒ page 37</u>	EVAP Purge Flow Monitor
\$41: <u>⇒ page 38</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 1
\$42: <u>⇒ page 38</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 2
\$43: <u>⇒ page 39</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 3
\$71: <u>⇒ page 39</u>	Secondary Air Monitor
\$A2: <u>⇒ page 40</u>	Misfire Cylinder 1 Data
\$A3: ⇒ page 40 AG. Volkswagen	Misfire Cylinder 2 Data
\$A4: <del>⇒ page 40</del>	Misfire Cylinder 3 Data
\$A5: ⇒ page 41	Misfire Cylinder 4 Data
\$A6: ⇒ page 41	Misfire Cylinder 5 Data

#### Monitor-ID \$01: Oxygen Sensor Monitor Bank 1 - Sensor 1

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$01".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$83	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250 – 0.400	1.999	Refer to DTC P0133 in the DTC summary table. <u>⇒ page</u> 210
\$84	P2195	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	-0.070 – - 0.065	0.065 – 0.070	Refer to DTC P2195 in the DTC summary table. ⇒ page 277
\$84		O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	10.065, NOWE	ິ0.065	Refer to DTC P2196 in the DTC summary table. ⇒ page 278
\$89	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. ⇒ page 210

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$02: Oxygen Sensor Monitor Bank 1 – Sensor 2

- Connect the scan tool.
- Start the engine and run at idle.



Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$02".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information			
\$81	P2271	Minimum Sensor Voltage Of Oscillation Bank 1 – Sensor 2.	0.0 V	0.5980 – 0.8018 V	Refer to DTC P2271 in the DTC summary table. ⇒ page 281			
\$82	P2270	Maximum Sensor Voltage Of Oscillation Bank 1 – Sensor 2.	0.5980 – 0.8018 V	1.1306 V	Refer to DTC P2270 in the DTC summary table. ⇒ page 280			
\$8A	P2271	Oxygen Sensor Minimal Voltage Bank 1 – Sensor 2.	0.0 V	0.1495 V	Refer to DTC P2271 in the DTC summary table. ⇒ page 281			
\$05	P013 A	Oxygen Sensor Transient Time Rich-Lean Bank 1 Sensor 2.	0.0 s	0.500 s	Refer to DTC P013A in the DTC summary table. ⇒ page 216			
Memodiagn  - Switc	Sos P013 Oxygen Sensor Transient Time Rich-Lean Bank 1 Sensor 2.  If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 − Read DTC Memory, page 21.  Switch the ignition off.  Monitor-ID \$03: Oxygen Sensor Monitor Bank 1 − Sensor 3  Connect the scan tool.  Start the engine and run at idle.  Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$03".  Select the desired "Test-ID".  Check specified values at idle.  Test-ID DTC Component or System Min. Max. Additional Information							
- Conn	ect the	scan tool.			pectt			
- Start	the eng	ine and run at idle.			othe			
	- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".							
Select "N	Monitor-	ID \$03".			less (			
- Selec	- Select the desired "Test-ID".							
- Chec	- Check specified values at idle.							
Test-ID	DTC	Component or System	Min.	Max.	Additional Information			

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory, page 21
- Switch the ignition off.

#### Monitor-ID \$03: Oxygen Sensor Monitor Bank 1 – Sensor 3

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P2275	Minimum Sensor Voltage Of Oscillation Bank 1 – Sensor 3.	0.0 V	0.6350 – 0.6540 V	Refer to DTC P2275 in the DTC summary table. ⇒ page 284
\$82	P2274	Maximum Sensor Voltage Of Oscillation Bank 1 – Sensor 3.	0.5980 – 0.8018 V	1.1306 V	Refer to DTC P2274 in the DTC summary table. ⇒ page 283
\$8A	P2275	Oxygen Sensor Minimal Voltage Hank 1 – Sensor 3.	J∂(0.0°V	0.1495 V	Refer to DTC P2275 in the DTC summary table. ⇒ page 284

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.



#### Monitor-ID \$21: Oxygen Storage Content of Catalyst

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$21".

- Select the desired "Test-ID".
- Check specified values at idle.

' '		Сроси	Tod Values at lais.							
Select the desired Test-ID.	Test-ID	DTC	Component or System	Min.	Max.	Additional Information				
Select the desired Test-ID.	\$84	P0420		1.0	19.988	Refer to DTC P0420 in the DTC summary table. ⇒ page 244AG. Volkswagen AG dogs				
Select the desired Test-ID.	- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.  - Switch the ignition off.									
Select the desired Test-ID.			W							
Select the desired Test-ID.	- Conne	ect the	scan tool.							
Select the desired Test-ID.	- Start t	he eng	ine and run at idle.							
Select the desired Test-ID.	- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".									
Select the desired Test-ID.	Select "M	onitor-l	D \$35".							
Check specified values at idle.	Select	the de	sired "Test-ID".							
	- Check	specif	ied values at idle.							

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure 

  M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$35: Variable Valve Timing Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$35".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$80	P0011	Target Error Intake Bank 1.	14.0 – 25.0°		Refer to DTC P0011 in the DTC summary table. ⇒ page 187
\$81	P000 A	Slow Response Intake Bank 1.	-14.0° 25.0°	-9.0 - <sup>6</sup> 47 <mark>28.0°</mark> <sup>6</sup> 47 <sub>00</sub>	Refer to DTC P000A in the DTC summary table. ⇒ page 185

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read D Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$3B: Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm)

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$3B".



- Select the desired "Test-ID".
- Check specified values at idle.

	DTC	Component or System	Min.	Max.	Additional Information			
\$86	P0442	Fuel Tank Leak Test: Small Leak.	7,373.0	65,535.0	Refer to DTC P0442 in the			
			WeW	agen AG. Volk	DTC summary table. <u>⇒ page</u> 247 <sup>en</sup> AG <sub>does</sub>			
	•		rised by Volke		onot guarant			
- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03; Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 − Read DTC Memory", page 21.  - Switch the ignition off.  Monitor-ID \$3C: Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)  - Connect the scan tool.								
Switc	h the ig	nition off.						
lonitor- ).020" /	ID \$3C: ' 0.5 mm	Fuel Tank EVAP System Integrity	/ Leak Test					
Conn	ect the	scan tool.						
Start	the eng	ine and run at idle.⊆						
<ul> <li>Start the engine and run at idle Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".</li> </ul>								
Select "N	Monitor-	ID \$3C".						
Select "Monitor-ID \$3C".  - Select the desired "Test-ID".  - Check specified values at idle.								
Chec	k specif	ied values at idle.						
	DTC	Component or System	Min.	Max.	Additional Information			

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03. Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure <u>> M3.3.3 ode 03 - Read DTC</u> Memory", page 21.
- Switch the ignition off.

## Monitor-ID \$3C: Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)

- Connect the scan tool.
- Start the engine and run at idle
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3C".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$84	P0456	Fuel Tank Leak Test: Very Small Leak.	0.0	0.170	Refer to DTC P0456 in the DTC summary table. ⇒ page 250		
– If any	- If any of the components or systems fail to meet the speci-						

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$3D: EVAP Purge Flow Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3D".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$8C	P0441	Purge Flow Monitor Valve Open.	0.0		Refer to DTC P0441 in the DTC summary table. ⇒ page 246
\$8D	P0441	Purge Flow Monitor Valve Closed.	0.0	1,803.0 – 5,948.0	Refer to DTC P0441 in the DTC summary table. ⇒ page 246



- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

### Monitor-ID \$41: Oxygen Sensor Heater Monitor Bank 1 - Sen-

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$41".

Select "N	Select "Monitor-ID \$41".						
- Selec	t the de	sired "Test-ID".					
- Chec	k specif	ied values at idle.					
Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$85	P0135	Oxygen Sensor Ceramic Temperature Bank 1 Sensor 1 Monitoring.	715° C	6,513.5° C	Refer to DTC P0135 in the DTC summary table. ⇒ page 211		
<ul> <li>If any fied v Memory diagn</li> <li>Memory Switc</li> </ul>	- Select the desired "Test-ID".  - Check specified values at idle.    Test-ID   DTC   Component or System   Min.   Max.   Additional Information						
Monitor-l sor 2	D \$42:	Oxygen Sensor Heater Monitor Bar	nk 1 – Sen-		The state of the s		
- Conn	ect the	scan tool.			TH TO		
- Start	the eng	ine and run at idle.			spect		
<ul><li>Selection</li><li>poner</li></ul>	Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".						
Select "Monitor-ID \$42".							
- Selec	- Select the desired "Test-ID".						
- Chec	- Check specified values at idle.						
Test-ID	DTC	Component or System	Min.	Max.	Additional Information		

#### Monitor-ID \$42: Oxygen Sensor Heater Monitor Bank 1 - Sensor 2

#### Select "Monitor-ID \$42".

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P0141	Oxygen Sensor Heating Internal Resistance Test Bank 1 Sensor 2.	0.0 Ω	20.4 kΩ	Refer to DTC P0141 in the DTC summary table. ⇒ page 219

- Coseweaho V Valright goo, inante If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read D Memory", page 21.
- Switch the ignition off.



#### Monitor-ID \$43: Oxygen Sensor Heater Monitor Bank 1 – Sensor 3

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$43".

- Select the desired "Test-ID".
- Check specified values at idle.

- Chec	k specif	ied values at idle.					
Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$81	P0147	1 Sensor 3 Internal Resistance Test.	0.0 Ω	32.4 kΩ	Refer to DTC P0147 in the DTC summary table. ⇒ page 226		
	•		volitowage[]]	AG does no <sub>t</sub> gu <sub>a</sub>	<i>t</i> a		
fied v Memo diagn	1 Sensor 3 Internal Resistance Test.  DTC summary table. ⇒ page 226  — If any of the components or systems fail to meet the speci- fied values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21  — Switch the ignition off.  Monitor-ID \$71: Secondary Air Monitor  — Connect the scan tool.  — Start the engine and run at idle.  — Select "Diagnostic Mode 06: Check / test the results of com-						
- Switc	h the ig	nition off.					
Monitor-	ID \$71:	Secondary Air Monitor			THE CO.		
- Conn	ect the	scan tool.			spect		
- Start	the eng	ine and run at idle.			toth		
<ul><li>Selection</li><li>pone</li></ul>	<ul> <li>Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".</li> <li>Select "Monitor-ID" \$71".</li> <li>Select the desired "Test-ID".</li> <li>Check specified values at idle.</li> </ul>						
Select "N	Select "Monitor-ID \$71".						
- Selec	- Select the desired "Test-ID".						
- Chec	k specif	ied values at idle.			forma		

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$71: Secondary Air Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$71".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	S Component or System	Min.	Max.	Additional Information
\$82	P0491	Blockage/Leakage Check Bank	0.500	1.999	Refer to DTC P0491 in the DTC summary table. ⇒ page 252
\$84		Pressure Pulsation Check Bank 1.	0.148 kPa	32.767 kPa	Refer to DTC P0491 in the DTC summary table. ⇒ page 252
\$85	P0410	Pressure Check Bank 1990	0.0 kPa ອ	5,000.0 kPa	Refer to DTC P0410 in the DTC summary table. ⇒ page 242
\$8A	P2240	Tightness Check Bank 1.	0.0	1.352	Refer to DTC P2440 in the DTC summary table. ⇒ page 295

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.



#### Monitor-ID \$A2: Mis-Fire Cylinder 1 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A2".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B	P0301	Cylinder 1 Data Averaged During Last 10 Drive Cycles.	0.0 counts		Refer to DTC P0301 in the DTC summary table. ⇒ page 231
\$0C	P0301	Cylinder 1 Data Averaged During Current Drive Cycle.	0.0 counts		Refer to DTC P0301 in the DTC summary table. ⇒ page 231

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC
- Switch the ignition off.

#### Monitor-ID \$A3: Mis-Fire Cylinder 2 Data

- Connect the scan tool.
- Start the engine and run at vidle.
- \* 2 Data

  Jolkswagen AG. Volkswagen AG does not guarantee or acceptance of the results of com-Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A3".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B		Misfire Cylinder 2, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0302 in the DTC summary table. ⇒ page 232
\$0C		Misfire Cylinder 2, In This Driving Cycle.	0.0 counts		Refer to DTC P0302 in the DTC summary table. ⇒ page 232

- AL INDIANO VOINGINGO JISTINGO If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A4: Mis-Fire Cylinder 3 Data

- Connect the scan tool.
- Protectedby Start the engine and run at idle.





Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$A4".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B		Misfire Cylinder 3, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0303 in the DTC summary table. ⇒ page 233
\$0C		Misfire Cylinder 3, In This Driving Cycle.	0.0 counts		Refer to DTC P0303 in the DTC summary table. ⇒ page 233

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure <u>> M3.3.3 ode 03 - Read DTC</u> Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A5: Mis-Fire Cylinder 4 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored.

#### Select "Monitor-ID \$A5".

- Select the desired "Test-ID".
- Check specified values at idle.

		ue Over 10 Driving Cycles.	counts	counts	DTC summary table. <u>⇒ page</u> 233	
\$0C	P0303	Misfire Cylinder 3, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0303 in the DTC summary table. ⇒ page 233	
fied v Memo diagn <u>Memo</u>	ralues, rory" to constic recory", pa	components or systems fail to me efer to Diagnostic "Mode 03: Inter heck for stored DTCs or the correpair procedure $\Rightarrow$ M3.3.3 ode 03 - ge 21.	et the speci rogating Fa ssponding Read DTC	- ult		
Monitor-I	ID \$A5:	Mis-Fire Cylinder 4 Data		, Jkswagen A	G. Volkswagen AG does p	
- Conn	ect the	scan tool.	isedb',	Ann	oriot guarant	
- Start	the eng	ine and run at idle.	es author.		"Mee Orac	
- Selection - Selection - Selection	ct "Diagr nts that	nostic Mode 06: Check / test the rare not continuously monitored."	esults of co	m-	Cog	Dr. Any
Select "N	Monitor-	ID \$A5".				ability of the same of the sam
- Selec	t the de	sired "Test-ID".				NA SALIS
- Chec	k specif	ID \$A5". sired "Test-ID". ied values at idle.				respe
Test-ID	DTC	Component or System	Min.	Max.	Additional Information	cttot
Test-ID \$0B		Component or System  Misfire Cylinder 4, Average Value Over 10 Driving Cycles.	Min. 0.0 counts	Max. 65,535.0 counts	Additional Information  Refer to DTC P0304 in the DTC summary table. ⇒ page  234	ct to the correct
	P0304	Misfire Cylinder 4, Average Value Over 10 Driving Cycles.  Misfire Cylinder 4, In This Driving Cycle.	Min.  0.0 counts  0.0 counts	Max. 65,535.0 counts 65,535.0 counts	Additional Information  Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234	$_{ m ct}$ to the correctness of $in_{ m fc}$
\$0B \$0C - If any fied v Memo diagn Memo	P0304 P0304  of the calues, rory" to coostic recory", par	Component or System  Misfire Cylinder 4, Average Value Over 10 Driving Cycles.  Misfire Cylinder 4, In This Driving Cycle.  components or systems fail to me efer to Diagnostic "Mode 03: Intersheck for stored DTCs or the correpair procedure ⇒ M3.3.3 ode 03 age 21.	Min.  0.0 counts  0.0 counts  et the specirogating Fasponding Read DTC	Max. 65,535.0 counts 65,535.0 counts	Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234	ot to the correctness of information in this oblin
\$0B \$0C  If any fied v Memodiagn Memode Switce	P0304 P0304 P0304  of the calues, rory" to coostic recory", parch the ig	Component or System  Misfire Cylinder 4, Average Value Over 10 Driving Cycles.  Misfire Cylinder 4, In This Driving Cycle.  Components or systems fail to me efer to Diagnostic "Mode 03: Intercheck for stored DTCs or the correspoir procedure ⇒ M3.3.3 ode 03 ge 21.  mition off.  Mis-Fire Cylinder 5 Data	Min.  0.0 counts  0.0 counts  et the specirogating Facesponding Read DTC	Max. 65,535.0 counts 65,535.0 counts	Additional Information  Refer to DTC P0304 in the DTC summary table. ⇒ page  234  Refer to DTC P0304 in the DTC summary table. ⇒ page  234  Refer to DTC P0304 in the DTC summary table. ⇒ page	$_{ m ct}$ to the correctness of information in this $_{ m CO}$
\$0B \$0C  If any fied v Memore diagn Memore Switce	P0304 P0304 P0304  of the calues, rory" to constic recory", paceth the ig	Mis-Fire Cylinder 5 Data	Min.  0.0 counts  0.0 counts  et the specimogating Fasesponding Read DTC	Max. 65,535.0 counts 65,535.0 counts	Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234	ct to the correctness of information in this occur.
\$0B \$0C  If any fied v Memore diagn Memore Switc Monitor-I	P0304 P0304 P0304  r of the cralues, r ory" to coory", pareth the ig	Mis-Fire Cylinder 5 Data scan tool.	Min.  0.0 counts  0.0 counts  et the specimogating Faresponding Read DTC	65,535.0 counts 65,535.0 counts	Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234	$_{ m ct}$ to the correctness of $inform_{ation}$ in $th_{iS}$ on $t_{iH}$
\$0B \$0C  If any fied v Memory Memory Switce Monitor-I Conn Start Select	P0304 P0304 P0304 P0304  r of the orallues, rory" to coostic recory", parch the ignored the engent "Diagram of the	Mis-Fire Cylinder 5 Data scan tool. ine and run at idle. nostic Mode 06: Check / test the r		Profected by	Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234  Refer to DTC P0304 in the DTC summary table. ⇒ page 234	$_{ m ct}$ to the correctness of $information$ in $fh/s$
\$0B \$0C  If any fied v Memore diagn Memore Switce  Monitor-I Conn Start Select	P0304 P0304 P0304 P0304 P0304 Postic recory", paceth the ignory the ignory is paceth the engent "Diagrants that"	Mis-Fire Cylinder 5 Data scan tool. ine and run at idle. nostic Mode 06: Check / test the rare not continuously monitored".		Profected by	Additional Information  Refer to DTC P0304 in the DTC summary table. ⇒ page  234  Refer to DTC P0304 in the DTC summary table. ⇒ page  234  234  Refer to DTC P0304 in the DTC summary table. ⇒ page  234	oct to the correctness of $inform_{afion}$ in this $g_{oct}$

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 ← Read DTC <u>Memory", page 21</u> .
- Switch the ignition off.

#### Monitor-ID \$A6: Mis-Fire Cylinder 5 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A6".

Select the desired "Test-ID".





Check specified values at idle.

			- agen AC	a. voikswagen	AG 4			
Test-ID	DTC	Component or System	olks Min.	Max.	Additional Information			
\$0B	P0305	Misfire Cylinder 5, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC 20305 in the DTC summary table. ⇒ page 236			
\$0C	P0305	Misfire Cylinder 5. In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. spage 236			
- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21  - Switch the ignition off.  3.3.8 Diagnostic Mode 06 – Read Test Results for Specific Diagnostic Functions, 2012 MY  Diagnostic Mode 06 makes it possible to retrieve test results for special components and systems which are continuously or not continuously monitored. If the diagnosis of a system is complete, the diagnostic result and the corresponding thresholds are saved and displayed in mode 06. This data remains saved (even with the ignition off) until either new diagnostic results become available or the DTC memory is erased.  The min & max values for each individual test in Mode 06 represent the min & max values for a properly operating system. This data is provided to the individual aftermarket scan tool companies for development of their scan tool. Depending on the scan tool being used, the min & max values shown may values for a properly operating to the property o								
Diagnostic Mode 06 makes it possible to retrieve test results for special components and systems which are continuously or not continuously monitored. If the diagnosis of a system is complete, the diagnostic result and the corresponding thresholds are saved and displayed in mode 06. This data remains saved (even with the ignition off) until either new diagnostic results become available or the DTC memory is erased.								
The min & max values for each individual test in Mode 06 represent the min & max operating values for a properly operating system. This data is provided to the individual aftermarket scan tool companies for development of their scan tool. Depending on the scan tool being used, the min & max values shown may vary, or be rounded up or down to the nearest decimal point depending on the aftermarket scan tool company's development process.								
For exar	nple; GS	ST manual documentation will sho	w the value	9				

an AG. Volkswagen Ao

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Diagnostic Mode 06 - Read Test Re-3.3.8 sults for Specific Diagnostic Functions, 2012 MY

For example; GST manual documentation will show the value as 0.3499 (units) while the scan tool will display the same value as 0.35 (units).

Depending on the scan tool and protocol used, the information displayed in Diagnostic Mode 06 may be referred to by different names such as Test-ID (TID), Hex-ID, Component-ID (CID), On-Board Diagnostic Monitor Identifier (OBDMID), or contain no name at all and may be referenced by only a number.

#### Test requirements

- Exhaust system must be properly sealed between the catalytic converter and the cylinder heads.
- No DTCs stored in the DTC memory.
- Coolant temperature at least 80° C.

#### Work procedure

- Connect the scan tool.
- Start the engine and let run at idle speed.
- Select Diagnostic Mode 06: Check / test the results of components that are not continuously monitored.

Select the desired Test-ID.





The current minimum and maximum values will be displayed on the scan tool screen.

The following table is a numerical list of all "Test-IDs" that may be selected.

Monitor-ID \$01: ⇒ page 43	olkswagen A <sub>G does</sub> Component or System
\$01: <u>⇒ page 43</u> N	Oxygen Sensor Monitor Bank 1 – Sensor 1
\$02: <u>⇒ page 44</u>	Oxygen Sensor Monitor Bank 1 – Sensor 2
\$03: <del>page 44</del>	Oxygen Sensor Monitor Bank 1 – Sensor 3
\$2∱: <u>⇒ page 45</u>	Catalytic Converter Monitoring
\$35: <u>⇒ page 45</u>	VVT Monitor Response Time/Target Error
\$3B: <u>⇒ page 46</u>	Fuel Tank EVAP System Integrity Leak Test (0.040" / 1.0 mm)
\$3C: <u>⇒ page 46</u>	Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)
\$3D: <u>⇒ page 46</u>	EVAP Purge Flow Monitor
\$41: <u>⇒ page 47</u>	Oxygen Sensor Heater Monitor Bank 6 - Sensor 1
\$42: <u>⇒ page 47</u>	Oxygen Sensor Heater Monitor Bank 🖺 – Sensor 2
§ \$43: <u>⇒ page 48</u>	Oxygen Sensor Heater Monitor Bank 🖟 – Sensor 3
\$71: <u>⇒ page 48</u>	Secondary Air Monitor
🦻 \$A2: <u>⇒ page 49</u>	Misfire Cylinder 1 Data
§ \$A3: <u>⇒ page 49</u>	Misfire Cylinder 2 Data
\$A4: <u>⇒ page 50</u>	Misfire Cylinder 3 Data
\$A5: <u>⇒ page 50</u>	Misfire Cylinder 4 Data
\$A60 <del>≥ page 51</del>	Misfire Cylinder 5 Data
Monitor-ID \$01: Oxygen Sensor Monitor Bank  - Connect the scan tool.	Gurdos *
- Connect the scan tool.	. DA nagawayi
<ul> <li>Start the engine and run at idle.</li> </ul>	

#### Monitor-ID \$01: Oxygen Sensor Monitor Bank 1 - Sensor 1 Protected

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$01".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$83	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. ⇒ page 326
\$84	P2195	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2195 in the DTC summary table. ⇒ page 394
\$84	P2196	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2196 in the DTC summary table. ⇒ page 395
\$89	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. ⇒ page 326

If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault



# Jetta, Jetta SportWagen, Golf, Passar 2010 ➤ Generic Scan Tool - Edition 07.2022

Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21 .

Switch the ignition off.

#### Monitor-ID \$02: Oxygen Sensor Monitor Bank 1 – Sensor 2

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$02".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P2271	Minimum Voltage Threshold From Rich To Lean.	0.0 V	0.8018 V	Refer to DTC P2271 in the DTC summary table. ⇒ page 398
\$82	P2270	Maximum Voltage Threshold From Lean To Rich.	0.5980 V	1.1306 V	Refer to DTC P2270 in the DTC summary table. ⇒ page
\$8A	P2271	O2 Sensor Minimal Voltage Bank 1 Sensor 2.	0.0 A	0.1500 🕏	Refer to DTC P2271 in the DTC summary table. ⇒ page 398
\$05	P013 A	O2 Sensor Transient Time, Bank 1 Sensor 2.	0.0 ms	500.0 ms	Refer to DTC P013A in the DTC summary table. ⇒ page 332

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$03: Oxygen Sensor Monitor Bank 1 – Sensor 3

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$03".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P2275	Minimum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	0.0 V	0.8018 V	Refer to DTC P2275 in the DTC summary table. ⇒ page 401
\$82	P2274	Maximum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	0.5980 V	1.1306 V	Refer to DTC P2274 in the DTC summary table. ⇒ page 400
\$8A		O2 Sensor Minimum Voltage Bank 1 Sensor 3.	0.0 V	0.1500 V	Refer to DTC P2275 in the DTC summary table. ⇒ page 401



- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$21: Oxygen Storage Content of Catalyst

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$21".

- Select the desired "Test-ID".
- Check specified values at idle.

- Selec	Select the desired "Test-ID".							
- Chec	- Check specified values at idle.							
Test-ID	DTC	Component or System	Min.	Max.	Additional Information			
\$84	P0420	Oxygen Storage Content Value Of Catalyst.	100.0%	655.35%	Refer to DTC P0420 in the DTC summary table. ⇒ page 360			
fied v Memo diagn	\$84 P0420 Oxygen Storage Content Value Of Catalyst.  100.0% 655.35% Refer to DTC P0420 in the DTC summary table. ⇒ page 360  If any of the components of systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.  Switch the ignition off.  Monitor-ID \$35: Variable Valve Timing Monitor  Connect the scan tool.  Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$35".  Select the desired "Test-ID".  Check specified values at idle.  Test-ID DTC Component or System Min. Max. Additional Information							
- Switc	h the ig	nition off.			Oligi			
Monitor-	ID \$35:	Variable Valve Timing Monitor			With Te			
- Conn	ect the	scan tool.			spec			
- Start	the eng	ine and run at idle.			A to th			
	- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".							
Select "N	Select "Monitor-ID \$35".							
- Selec	t the de	sired "Test-ID".			s of ir			
- Chec	k specij	ied values at idle.			<sup>n</sup> form <sub>a</sub>			
Test-ID	DTC	Component or System	Min.	Max.	Additional Information			
		2						

- If any of the components of systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure at M3.2.2 and 0.2. December 1970. diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$35: Variable Valve Timing Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$80	P0011	Target Error Intake Bank 1.	- 14.25	28.0	Refer to DTC P0011 in the DTC summary table. ⇒ page 303
\$81	P000 A	Slow Response Intake Bank 1.	- 14.25	28.0	Refer to DTC P000A in the DTC summary table. ⇒ page 301
		Protected by	.gen AG.	Nolksws	

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.



#### Monitor-ID \$3B: Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm)

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3B".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$86	P0442	Fuel Tank Leak Test: Small Leak.	900.0 Pa		Refer to DTC P0442 in the DTC summary table. ⇒ page 363

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding aun.

  IC

  Idoes not guarantee or acceptanuliability with respec diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$3C: Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3C".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81		Fuel Tank Leak Test: Very Small Leak.	5,800.0 ms		Refer to DT€ P0456 in the DTC summary table. ⇒ page 366
\$82	or com	EVAP Monitor System Ok By Initial Purge Check.	29.8 g	6,553.5 g	<sup>#</sup> ujuo <sub>ji</sub>
\$84	P0456	Fuel Tank Leak Test: Very Small Leak (CBUA).	0.0	0.170	Refer to DTC P0456 in the DTC summary table. ⇒ page 366

pect to the correc

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure  $\Rightarrow$  M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$3D: EVAP Purge Flow Monitor

- Connect the scan tool.
- Start the engine and run at idle.



Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$3D".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$8C	P0496	Purge Flow Monitor Valve Open.	0.0 mA		Refer to DTC P0496 in the DTC summary table. ⇒ page 369
\$8D	P0441	Purge Flow Monitor Valve Closed.	0.0 mA	36.3 mA	Refer to DTC P0441 in the DTC summary table. ⇒ page 362

- Switch the ignition off.

## Monitor-ID \$41: Oxygen Sensor Heater Monitor Bank 1 – Sensor 1

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check/ test the results of components that are not continuously monitored".

Select "Monitor-ID \$41".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System 5	Min.	Max.	Additional Information
\$85	P0135	Oxygen Sensor Ceramic Temperature Bank 1 Sensor 1 Monitoring.	715° C		Refer to DTC P0135 in the DTC summary table. page 327
			19,	Protecte	. DA nageways.

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

## Monitor-ID \$42: Oxygen Sensor Heater Monitor Bank 1 – Sensor 2

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$42".

- Select the desired "Test-ID".
- Check specified values at idle.



Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81		Oxygen Sensor Heating Internal Resistance Test Bank 1 Sensor 2.	0.0 Ω		Refer to DTC P0141 in the DTC summary table. ⇒ page 335

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

## Monitor-ID \$43: Oxygen Sensor Heater Monitor Bank 1 – Sensor 3

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$43".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	AG. Minswag	len AG d	Additional Information
\$81		Oxygen Sensor Heating Bank 1 Sensor 3 Internal Resistance Test.	0.0 Ω		Refer to DTC P0147 in the DTC summary table. ⇒ page 342

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$71: Secondary Air Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$71"

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$82	P0491	Blockage/Leakage Check Bank 1.	0.500	1.999	Refer to DTC P0491 in the DTC summary table. ⇒ page 368
\$84	P0491	Pressure Pulsation Check Bank 1.	d 0.148 kPa	32:767 kPa	Refer to DTC P0491 in the DTC summary table. ⇒ page 368
\$85	P0410	Pressure Check Bank 1.	0.0 kPa	5,000.0 kPa	Refer to DTC P0410 in the DTC summary table. ⇒ page 358



Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$8A	P2240	Tightness Check Bank 1.	0.0		Refer to DTC P2440 in the DTC summary table. ⇒ page 412

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure <u>> M3.3.3 ode 03 - Read DTC</u> Memory, page 21.
- Switch the ignition off.

#### Monitor-ID \$A2: Mis-Fire Cylinder 1 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A2".

- Select the desired "Test-ID".
- Check specified values at idle.

Mem diagi	Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC  Memory, page 21.  Switch the ignition off.  Monitor-ID \$A2: Mis-Fire Cylinder 1 Data  Connect the scan tool.  Start the engine and run at idle.  Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".								
- Swit	- Switch the ignition off.								
Monitor-	Monitor-ID \$A2: Mis-Fire Cylinder 1 Data								
- Conr	nect the	scan tool.			th res				
- Start	the eng	ine and run at idle.			spect				
		nostic Mode 06: Check / test the reare not continuously monitored".	esults of co	m-	to the oc				
Select "	Monitor-	ID \$A2".			orrect				
- Sele	ct the de	sired "Test-ID".			correctness				
- Chec	ck specif	ied values at idle.			of info				
Test-ID	DTC	Component or System	Min.	Max.	Additional Information				
\$0B	P0301	Cylinder 1 Data Averaged During Last 10 Drive Cycles.	0.0 counts		Refer to DTC P0301 in the DTC summary table. <u>⇒ page</u> 347				
\$0C	ing Current Drive Cycle. counts DTC summary table. <u>⇒ page</u>								
- If an	- If any of the components of systems fail to meet the speci-								

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$A3: Mis-Fire Cylinder 2 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A3".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B		Misfire Cylinder 2, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0302 in the DTC summary table. ⇒ page 348
\$0C	P0302	Misfire Cylinder 2, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0302 in the DTC summary table. ⇒ page 348



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  If any of the components or systems fail to meet the speci<sup>yolkswagen</sup> AG does not great field values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding "anostic repair procedure ⇒ M3.3.3 ode 03 − Read DTC

  "an off.

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  "te of com
  "ation."

  "ation."
- Switch the ignition off.

#### Monitor-ID \$A4: Mis-Fire Cylinder 3 Data

#### Select "Monitor-ID \$A4".

Test-ID	DTC	Component or System	Min.	Max.	Additional Information				
\$0B	P0303	Misfire Cylinder 3, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0303 in the DTC summary table. ⇒ page 349				
\$0C	P0303	Misfire Cylinder 3, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0303 in the DTC summary table. ⇒ page 349				
fied v Memo	- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure > M3 3 3 ode 03 - Read DTC								

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure 

  M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A5: Mis-Fire Cylinder 4 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A5".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B		Misfire Cylinder 4, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0304 in the DTC summary table. ⇒ page 350
\$0C		Misfire Cylinder 4, In This Driving Cycle.	0.0 counts		Refer to DTC P0304 in the DTC summary table. ⇒ page 350

If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding



diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21 .

Switch the ignition off.

#### Monitor-ID \$A6: Mis-Fire Cylinder 5 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$A6".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$0B	P0305	Misfire Cylinder 5, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page 352		
\$0C		Misfire Cylinder 5, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page 352		
352  Siesal by Volkswagen AG. Volkswagen AG does not gualante							

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory" page 21.
- Switch the ignition off.

## 3.3.9 Diagnostic Mode 06 – Read Test Results for Specific Diagnostic Functions, 2013 MY

Diagnostic Mode 06 makes it possible to retrieve test results for special components and systems which are continuously or not continuously monitored. If the diagnosis of a system is complete, the diagnostic result and the corresponding thresholds are saved and displayed in mode 06. This data remains saved (even with the ignition off) until either new diagnostic results become available or the DTC memory is erased.

The min & max values for each individual test in Mode 06 represent the min & max operating values for a properly operating system. This data is provided to the individual aftermarket scan tool companies for development of their scan tool. Depending on the scan tool being used, the min & max values shown may vary, or be rounded up or down to the nearest decimal point depending on the aftermarket scan tool company's development process.

For example; GST manual documentation will show the value as 0.3499 (units) while the scan tool will display the same value as 0.35 (units).

Depending on the scan tool and protocol used, the information displayed in Diagnostic Mode 06 may be referred to by different names such as Test-ID (TID), Hex-ID, Component-ID (CID), On-Board Diagnostic Monitor Identifier (OBDMID), or contain no name at all and may be referenced by only a number.



#### **Test requirements**

- Exhaust system must be properly sealed between the catalytic converter and the cylinder heads.
- No DTCs stored in the DTC memory.
- Coolant temperature at least 80° C.

#### Work procedure

- Connect the scan tool.
- Start the engine and let run at idle speed.
- Select Diagnostic Mode 06: Check / test the results of components that are not continuously monitored.

Select the desired Test-ID.

Nolkswagen AG. Volkswagen AG does not guarantee of acceptable. The current minimum and maximum values will be displayed on the scan tool screen.

The following table is a numerical list of all "Test-IDs" that may be selected.

Monitor-ID §	Component or System
\$01: <u>⇒ page 52</u> 5	Oxygen Sensor Monitor Bank 1 – Sensor 1
\$02: <u>⇒ page 53</u>	Oxygen Sensor Monitor Bank 1 – Sensor 2
\$03: <u>⇒ page 53</u> 🗓	Oxygen Sensor Monitor Bank 1 – Sensor 3
\$21: <u>⇒ page 54</u>	Catalytic Converter Monitoring
\$35: <u>⇒ page 54</u>	VVT Monitor Response Time/Target Error
\$3B: <u>⇒ page 55</u>	Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm)
\$3C: <u>⇒ page 55</u>	Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.50 mm)
\$3D: <u>⇒ page 56</u>	EVAP Purge Flow Monitor
\$41: <u>⇒ page 56</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 1
\$42: <u>⇒ page 57</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 2
\$43: <u>⇒ page 57</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 3
\$71: <u>⇒ page 58</u>	Secondary Air Monitor
\$A2: <u>⇒ page 58</u>	Misfire Cylinder 1 Data
\$A3: <u>⇒ page 59</u>	Misfire Cylinder 2 Data
\$A4: <u>⇒ page 59</u>	Misfire Cylinder 3 Data
\$A5: <u>⇒ page 59</u>	Misfire Cylinder 4 Data
\$A6: <u>⇒ page 60</u>	Misfire Cylinder 5 Data

#### Monitor-ID \$01: Oxygen Sensor Monitor Bank 1 - Sensor 1

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$01".

- Select the desired "Test-ID".
- Check specified values at idle.

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Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$83	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. page 443
\$84	P2195	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2195 in the DTC summary table. ⇒ page 511
\$84	P2196	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2196 in the DTC summary table. ⇒ page 512
\$89	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. ⇒ page 443

- If any of the components of systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$02: Oxygen Sensor Monitor Bank 1 Sensor 2

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$02".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P2271	Minimum Voltage Threshold From Rich To Lean.	0.0 V	0.8018 V	Refer to DTC P2271 in the DTC summary table. ⇒ page 515
\$82	P2270	Maximum Voltage Threshold From Lean To Rich.	0.5980 V	1.1306 V	Refer to DTC P2270 in the DTC summary table. ⇒ page 514
\$8A	P2271	O2 Sensor Minimal Voltage Bank 1 Sensor 2.	0.0 V	0.1500 V	Refer to DTC P2271 in the DTC summary table. ⇒ page 515
\$05	P013 A	O2 Sensor Transient Time, Bank 1 Sensor 2.	0.0 ms	500.0 ms	Refer to DTC P013A in the DTC summary table. ⇒ page 449

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$03: Oxygen Sensor Monitor Bank 1 – Sensor 3

- Connect the scan tool.
- Start the engine and run at idle.



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Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$03".

- Select the desired "Test-ID".
- Check specified values at idle.

<ul> <li>Select the desired "Test-ID".</li> <li>Check specified values at idle.</li> </ul>							
Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$81	P2275	Minimum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	0.0 V	0.8018 V	Refer to DTC P2275 in the DTC summary table page 518		
\$82	P2274	Maximum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	0.5980 V	1.1306 V	Refer to DTC P2274 in the DTC summary table. ⇒ page 517		
\$8A	P2275	O2 Sensor Minimum Voltage Bank 1 Sensor 3.	0.0 V	0.1500 V	Refer to DTC P2275 in the DTC summary table. ⇒ page 518		
Memo- Switc	ory", pag h the ig	pair procedure ⇒ M3.3.3 ode 03 – F ge 21 . nition off. Oxygen Storage Content of Catalys			nation in this or		
- Conn	ect the	scan tool.			Jahno		
- Start the engine and run at idle.							
- Start	the eng	ine and run at idle.			Culdoo **		
0.1.	. "D"	The Mark and Object 11 The State of the Stat	sults of com	ı-\ Q	Jagewaylo V to High goo, *		
- Selec	ct "Diagr nts that	nostic Mode 06: Check / test the res are not continuously monitored.	sults of com	.9Ar	COONIGHTON VOIKEWAGO		
- Selec pone Select "N	ct "Diagr nts that Monitor-	nostic Mode 06: Check / test the res are not continuously monitored.	sults of com <sup>ગુગુ</sup> ગુગુ <sub>ન</sub>	.5Ar	POSEWRANO V VOLKSWAGOOD, A		
- Selec pone Select "N - Selec	ct "Diagr nts that Monitor- ct the de	nostic Mode 06: Check / test the res are not continuously monitored.	sults of com	.9Ar	518  The correctness of information in t		

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$21: Oxygen Storage Content of Catalyst

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored". Aspaioaloud



- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$84		Oxygen Storage Content Value Of Catalyst.	100.0%		Refer to DTC P0420 in the DTC summary table. ⇒ page 477

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$35: Variable Valve Timing Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$35".

Select the desired "Test-ID".



Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$80	P0011	Target Error Intake Bank 1.	- 14.25	28.0	Refer to DTC P0011 in the DTC summary table. ⇒ page 420
\$81	P000 A	Slow Response Intake Bank 1.	- 14.25	28.0	Refer to DTC P000A in the DTC summary table. ⇒ page 418

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory", page 21

  - Switch the ignition off.

  Monitor-ID \$3B: Fuel Tank EVAP System Integrity / Leak Test Volkswagen AG does not guarantee or adaption of the support of th Memory" to check for stored DTCs or the corresponding

- ponents that are not continuously monitored".

Select "Monitor-ID \$3B".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information			
\$86	P0442	Fuel Tank Leak Test: Small Leak.	900.0 Pa	8,191.75 Pa	Refer to DTC P0442 in the SDTC summary table. ⇒ page			
		Ses,			480			
fied v Memo diagn	<ul> <li>If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure № M3.3.3 ode 03 – Read DTC Memory", page 21.</li> <li>Switch the ignition off.</li> <li>Monitor-ID \$3C: Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)</li> <li>Connect the scan tool.</li> <li>Start the engine and run at idle.</li> <li>Select "Diagnostic Mode 06: Check / test the results of com-</li> </ul>							
- Switc	h the ig	nition off.			autook			
Monitor- (0.020" /		Fuel Tank EVAP System Integrity (		9	ugudo ju			
- Conn	ect the	scan tool.	Days -		ESWEMOV KOTO			
<ul><li>Start</li></ul>	O.020" / 0.5 mm)  Connect the scan tool.  Start the engine and run at idle.							
	Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".							
Select "N	Monitor-	D \$3C".						

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.



- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81		Fuel Tank Leak Test: Very Small Leak.	5,800.0 ms		Refer to DTC P0456 in the DTC summary table. ⇒ page 483

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Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$82		EVAP Monitor System Ok By Initial Purge Check.	29.8 g	6,553.5 g	
\$84	P0456	Fuel Tank Leak Test: Very Small Leak (CBUA).	0.0		Refer to DTC P0456 in the DTC summary table. ⇒ page 483

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$3D: EVAP Purge Flow Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- authorised by Volkswagen AG. Volkswagen AG does not guarantee of acceptage of the com-Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3D".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$8C	P0496	Purge Flow Monitor Valve Open.	0.0 mA		Refer to DTC P0496 in the DTC summary table. ⇒ page 486
\$8D	P0441	Purge Flow Monitor Valve Closed.	0.0 mA		Refer to DTC P0441 in the DTC summary table. ⇒ page 479

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- If any of the components or systems fail to meet the specified values, refer to Diagnostic Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$41: Oxygen Sensor Heater Monitor Bank 1 - Sensor 1

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$41".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$85		Oxygen Sensor Ceramic Temperature Bank 1 Sensor 1 Monitoring.	715° C		Refer to DTC P0135 in the DTC summary table. ⇒ page 444



- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC
- Switch the ignition off.

## Monitor-ID \$42: Oxygen Sensor Heater Monitor Bank 1 – Sen-

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored

#### Select "Monitor-ID \$42".

- Select the desired "Test-ID".
- Check specified values at idle.

<ul><li>Switch</li></ul>	n the igi	nition off.					
Monitor-ID \$42: Oxygen Sensor Heater Monitor Bank 1 – Sensor 2  - Connect the scan tool.  - Start the engine and run at idle.  - Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$42".  - Select the desired "Test-ID".  - Check specified values at idle.							
- Connect the scan tool.							
<ul><li>Start f</li></ul>	the eng	ine and run at idle.	Nolksws	agen AG. Volksi	wagen AG does not		
<ul><li>Selection</li><li>poner</li></ul>	t "Diagr nts that	nostic Mode 06: Check / test the res are not continuously monitored	sults of com	1-	· Guarantee or		
Select "M	/lonitor-l	ID \$42".			4cc <sub>E</sub> o <sub>r</sub>		
- Selec	t the de	esired "Test-ID".			921		
<ul><li>Check</li></ul>	k specif	ied values at idle.					
Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$81	P0141	Oxygen Sensor Heating Internal Resistance Test Bank 1 Sensor 2.	0.0 Ω	20.4 kΩ	Refer to DTC P0141 in the DTC summary table. ⇒ page 452		
Memo diagno <u>Memo</u>	ory" to c ostic rep ory", pag	refer to Diagnostic Mode 03: Interrocheck for stored DTCs or the correspair procedure $\Rightarrow$ M3.3.3 ode 03 – Fige 21.	sponding		Additional Information  Refer to DTC P0141 in the DTC summary table. ⇒ page  452  - DY uebs MS NO N Kanufill Market Mark		
Monitor-I sor 3	D \$43:	Oxygen Sensor Heater Monitor Bar	nk 1 – Sen-	•			
– Conn	ect the	scan tool.			Justin		
- Start the engine and run at idle.							
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".							
Select "Monitor-ID \$43".							
<ul><li>Selection</li></ul>	t the de	esired "Test-ID".					
<ul><li>Check</li></ul>	k specif	ïed values at idle.					
Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$81	P0147	Oxygen Sensor Heating Bank	0.00	32 4 kO	Refer to DTC P0147 in the		

- If any of the components or systems fail to meet the specified values, refer to Diagnostic Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC
- Switch the ignition off.

## Monitor-ID \$43: Oxygen Sensor Heater Monitor Bank 1 – Sen-

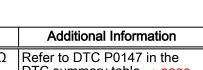
- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$43".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P0147	Oxygen Sensor Heating Bank 1 Sensor 3 Internal Resistance Test.	0.0 Ω		Refer to DTC P0147 in the DTC summary table. ⇒ page 459

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read D1 <u>Memory", page 21</u> .
- Switch the ignition off.



#### Monitor-ID \$71: Secondary Air Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$71".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$82	P0491	Blockage/Leakage Check Bank 1.	0.500	1.999	Refer to DTC P0491 in the DTC summary table. ⇒ page 485		
\$84	P0491	Pressure Pulsation Check Bank 1.	0.148 kPa	32.767 kPa Lolkswagen AG	Refer to DTC P0491 in the DTC summary table. ⇒ page 485		
\$85	P0410	Pressure Check Bank 1.	0.0 kPay	5,000.0 kPa	Refer to DTC P0410 in the DTC summary table. → page 475		
\$8A	P2240	Tightness Check Bank 1.	0.0	1.352	Refer to DTC P2440 in the DTC summary table. ⇒ page 529		
- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3,3 ode 03 – Read DTC Memory", page 21.  - Switch the ignition off.  Monitor-ID \$A2: Mis-Fire Cylinder 1 Data  - Connect the scan tool.  - Start the engine and run at idle.  - Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$A2".  - Select the desired "Test-ID".  - Check specified values at idle.  Test-ID DTC Component or System Min. Additional Information							
		scan tool. If the same and run at idle.					
<ul> <li>Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".</li> </ul>							
Select "Monitor-ID \$A2".							
- Select the desired "Test-ID".							
- Check specified values at idle.							
Test-ID	DTC	Component or System	Min.	19 <sub>Də</sub> Max.	Additional Information		
\$0B	P0301	Cylinder 1 Data Averaged During Last 10 Drive Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0301 in the DTC summary table. ⇒ page 464		

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3,3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$A2: Mis-Fire Cylinder 1 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A2".

- Select the desired "Test-ID".
- Check specified values at idle.

pono	nto triat	are not continuously morntoised .			
Select "N	Monitor-	ID \$A2".			
- Selec	t the de	sired "Test-ID".	11500		illari
- Chec	k specif	ied values at idle.	20) :46/1/16/14 CO+		(Quidyndo)
Test-ID	DTC	Component or System	Min.	9 <sub>Del</sub> Max.	Additional Information
\$0B	P0301	Cylinder 1 Data Averaged During Last 10 Drive Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0301 in the DTC summary table. ⇒ page 464
\$0C	P0301	Cylinder 1 Data Averaged During Current Drive Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0301 in the DTC summary table. ⇒ page 464

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure <u>⇒ M3.3.3 ode 03 − Read DTC</u> Memory", page 21.
- Switch the ignition off.



#### Monitor-ID \$A3: Mis-Fire Cylinder 2 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A3".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B		Misfire Cylinder 2, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0302 in the DTC summary table. ⇒ page 465
\$0C	P0302	Misfire Cylinder 2, In This Driving Cycle.	0.0 counts		Refer to DTC P0302 in the DTC summary table. ⇒ page 465

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A4: Mis-Fire Cylinder 3 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A4".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
S \$0B	P0303	Misfire Cylinder 3, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0303 in the DTC summary table. ⇒ page 466		
\$0C/ <sub>0]</sub>	1000 y	Misfire Cylinder 3, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0303 in the DTC summary table. ⇒ page 466		
Protected by Copyright							
<ul><li>If any</li></ul>	- If any of the components or systems fail to meet the speci-						

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A5: Mis-Fire Cylinder 4 Data

- Connect the scan tool.
- Start the engine and run at idle.

#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$A5".

- Select the desired "Test-ID".
- Check specified values at idle. AG. Volkswagen AG does not

Test-ID	DTC	Component or System	Min. Paran	Max.	Additional Information
\$0B		Misfire Cylinder 4, Average Val- ue Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0304 in the DTC summary table. ⇒ page 467
\$0C		Misfire Cylinder 4, In This Driving Cycle.	0.0 counts		Refer to DTC P0304 in the DTC summary table. ⇒ page 467

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure <u>> M3.3.3 ode 03 - Read DTC</u> Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$A6: Mis-Fire Cylinder 5 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A6".

- Select the desired "Test-ID".
- Check specified values at idle.

Snotpo		ing Cycle.	counts	counts	DTC summary table. <u>⇒ page</u> 467		
whole,							
fied va Memo diagno	- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.  - Switch the ignition off.  Monitor-ID \$A6: Mis-Fire Cylinder 5 Data  - Connect the scan tool.  - Start the engine and run at idle.  - Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".  Select "Monitor-ID \$A6".  - Select the desired "Test-ID".  - Check specified values at idle.  Test-ID DTC Component or System Min. Max. Additional Information  \$0B P0305 Misfire Cylinder 5, Average Val-  - DTC Ruspress that a page 1.  - DTC Ruspress t						
- Switch	n the igi	nition off.			10 88		
Monitor-II	D \$A6:	Mis-Fire Cylinder 5 Data			info		
- Conne	ect the	scan tool.			mati		
- Start t	he eng	ine and run at idle.			3		
		nostic Mode 06: Check / test the reare not continuously monitored".	esults of co	m-			
Select "M	lonitor-l	D \$A6".		. No.			
- Select	t the de	sired "Test-ID".	(0,146)	ikao			
- Check	specif	ied values at idle.	NO IKENS				
Test-ID	DTC	Component or System	Min.	Max.	Additional Information		
\$0B	P0305	Misfire Cylinder 5, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page 469		
\$0C	P0305	Misfire Cylinder 5, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0305 in the DTC summary table. ⇒ page 469		

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Diagnostic Mode 06 – Read Test Re-3.3.10 sults for Specific Diagnostic Functions, 2014 MY

Diagnostic Mode 06 makes it possible to retrieve test results for special components and systems which are continuously or not continuously monitored. If the diagnosis of a system is complete, the diagnostic result and the corresponding thresholds are saved and displayed in mode 06. This data remains saved



h the ignition off) until either new cavailable or the DTC memory is eras.

In & max values for each individual test in Mc. Ite min & max operating values for a properly ope.

In This data is provided to the individual aftermarket.

Companies for development of their scan tool. Depending, an escan tool being used, the min & max values shown may y, or be rounded up or down to the nearest decimal point dending on the aftermarket scan tool company's development ocess.

For example; GST manual documentation will show the value as 0.3499 (units) while the scan tool will display the same value as 0.3499 (units) while the scan tool will display the same value as 0.3499 (units).

Depending on the scan tool and protocol used, the information displayed in Diagnostic Mode 06 may be referred to by different mes such as Test-ID (TID), Hex-ID, Component-ID (CID),

"and Diagnostic Monitor Identifier (OBDMID), or contain no all and may be referenced by only a number.

"ents

"must be properly sealed between the cata
"the cylinder heads.

"TIC memory.

"80° C.

"Its of com-

Monitor-ID Wondon	Component or System
\$01: <u>⇒ page 62</u>	Oxygen Sensor Monitor Bank 1 – Sensor 1
\$02: <u>⇒ page 62</u>	Oxygen Sensor Monitor Bank 1 – Sensor 2
\$03: <u>⇒ page 63</u>	Oxygen Sensor Monitor Bank 1 – Sensor 3
\$21: <u>⇒ page 63</u>	Catalytic Converter Monitoring
\$35: <u>⇒ page 64</u>	VVT Monitor Response Time/Target Error
\$3B: <u>⇒ page 64</u>	Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm)
\$3C: <u>⇒ page 65</u>	Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)
\$3D: <u>⇒ page 65</u>	EVAP Purge Flow Monitor
\$41: <u>⇒ page 66</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 1
\$42: <u>⇒ page 66</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 2
\$43: <u>⇒ page 66</u>	Oxygen Sensor Heater Monitor Bank 1 – Sensor 3
\$71: <u>⇒ page 67</u>	Secondary Air Monitor
\$A2: <u>⇒ page 67</u>	Misfire Cylinder 1 Data
\$A3: <u>⇒ page 68</u>	Misfire Cylinder 2 Data
\$A4: <u>⇒ page 68</u>	Misfire Cylinder 3 Data



Monitor-ID	Component or System		
\$A5: <u>⇒ page 69</u>	Misfire Cylinder 4 Data		
\$A6: <u>⇒ page 69</u>	Misfire Cylinder 5 Data		

#### Monitor-ID \$01: Oxygen Sensor Monitor Bank 1 – Sensor 1

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$01".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$83	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250 n AG. Volkswa	1.999	Refer to DTC P0133 in the DTC summary table. ⇒ page 560
\$84	P2195	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2195 in the DTC summary table. ⇒ page 629
\$84	P2196	O2 Sensor Front/Rear Rationality Bank 1 Sensor 1.	- 0.070	0.070	Refer to DTC P2196 in the DTC summary table. ⇒ page 630
\$89	P0133	Oxygen Sensor Signal Dynamic Bank 1 Sensor 1.	0.250	1.999	Refer to DTC P0133 in the DTC summary table. ⇒ page 560

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21 S
- Switch the ignition off.

#### Monitor-ID \$02: Oxygen Sensor Monitor Bank 1 – Sensor 2

- Connect the scan tool 5
- Start the engine and run at idle.
- Select "Diagnostic Mode 06" Check / test the results of components that are not continuously monitored". Protected by copyright, Co.

- Select the desired "Test-ID".
- Check specified values at idle.

	00	1 0100	Bank 1 Sensor 1.	0.200	1.555	DTC summary table. ⇒ page  560
f N C	ied v Memo diagn <u>Memo</u>	alues, re ory" to c ostic re ory", pag	components or systems fail to meet the effect of Diagnostic "Mode 03: Interrogues of the corresponding procedure ⇒ M3.3.3 ode 03 – Rege 21 continuous off.	the speci- gating Fault onding ead DTC	i	Additional Information
		_	Oxygen Sensor Monitor Bank 1 – Se	ensor 2		nform <sub>2</sub>
- (	Conn	ect the	scan tool.			Attion ii
- 5	Start	the eng	ine and run at idle.			nthis c
			nostic Mode 06; Check / test the resu are not continuously monitored".	ults of com-		ingulogy
Sele	ect "N	lonitor-	ID \$02". sired "Test-ID". ied values at idle.		9	GundoO
- 5	Selec	t the de	sired "Test-ID".			MoVYdian
- (	Chec	k specif	ied values at idle.	ld	. ĐA napsivie	
Tes	st-ID	DTC	Component or System	Min.	Max.	Additional Information
\$	81	P2271	Minimum Voltage Threshold From Rich To Lean.	0.0 V	0.8018 V	Refer to DTC P2271 in the DTC summary table. ⇒ page 633
\$	82	P2270	Maximum Voltage Threshold From Lean To Rich.	0.5980 V	1.1306 V	Refer to DTC P2270 in the DTC summary table. ⇒ page 632



Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$8A	P2271	O2 Sensor Minimal Voltage Bank 1 Sensor 2.	0.0°V <sub>0t 90</sub>	0.1500 V	Refer to DTC P2271 in the DTC summary table. ⇒ page 633
\$05	P013 A	O2 Sensor Transient Time, Bank 1 Sensor 2.	0.0 ms	500.0 ms	Refer to DTC P013A in the DTC summary table. ⇒ page 566

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor D \$03: Oxygen Sensor Monitor Bank 1 – Sensor 3

- Connect the scan tool.
- Start the engine and run at idle.
- Select Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$03".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P2275	Minimum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	<sup>DA</sup> 1 <b>0;0</b> <u>0</u>		Refer to DTC P2275 in the DTC summary table. ⇒ page 636
\$82	P2274	Maximum Sensor Voltage Of Oscillation Bank 1 Sensor 3.	0.5980 V		Refer to DTC P2274 in the DTC summary table. ⇒ page 635
\$8A	P2275	O2 Sensor Minimum Voltage Bank 1 Sensor 3.	0.0 V		Refer to DTC P2275 in the DTC summary table. ⇒ page 636

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$21: Oxygen Storage Content of Catalyst

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$21".

- Select the desired "Test-ID".
- Check specified values at idle.



#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$84		Oxygen Storage Content Value Of Catalyst.	100.0%		Refer to DTC P0420 in the DTC summary table. ⇒ page 595

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$35: Variable Valve Timing Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$35".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$80	P0011	Target Error Intake Bank 1.	- 14.25	28.0	Refer to DTC P0011 in the DTC summary table. ⇒ page 537
\$81	P000 A	Slow Response Intake Bank 1.	- 14.25	28.0	Refer to DTC P000A in the DTC summary table. ⇒ page 535
If any	of the	components or systems fail to meet	Wyolkswagen		Gdoes not guarante
fied v Memo diagn	alues, r ory" to c	efer to Diagnostic "Mode 03: Interro heck for stored DTCs or the corres pair procedure ⇒ <u>M3.3.3 ode 03 – F</u>	ogating Fau ponding	lt	Refer to DTC P000A in the DTC summary table. ⇒ page  535  Son AG does not guarantee of acceptantiability with respect to the content as a content a
<ul><li>Switc</li></ul>	the ig	nition off.			
Monitor-  (0.040" /	ID \$3B: 1.0 mm	Fuel Tank EVAP System Integrity / i)	Leak Test		threspen
– Conn	ect the	scan tool.			City of the city o
- Start	the eng	ine and run at tdle.			
		nostic Mode 06; Check / test the resare not continuously monitored".	sults of com	1-	
Select "N	Monitor-	ID \$3B".		7	SSOF
- Selec	t the de	esired "Test-ID".			infor
- Chec	k specif	ied values at idle			mation
	DTC	Component or System	Min.	Max.	

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03. Interrogating Fault Memory" to check for stored DTCs on the corresponding diagnostic repair procedure ⇒ M3.33 ode 03 – Read DT Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$3B: Fuel Tank EVAP System Integrity / Leak Test (0.040" / 1.0 mm)

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06; Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3B".

- Select the desired "Test-ID".
- Check specified values at idle

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$86	P0442	Fuel Tank Leak Test Small Leak.	900.0 Pa	8,191.75 Pa	Refer to DTC P0442 in the DTC summary table. page 598
<ul><li>If any fied v</li></ul>	of the o	components or systems fail to meet efer to Diagnostic "Mode 03: Interro	the speci- ogating Fau	lt .	-DA nagswaylo V toth giveo



Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21

Switch the ignition off.

## Monitor-ID \$3C: Fuel Tank EVAP System Integrity / Leak Test (0.020" / 0.5 mm)

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check? test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3C".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P0456	Fue Tank Leak Test: Very Small Leak.	5,800.0 ms		Refer to DTC P0456 in the DTC summary table ⇒ page 601
\$82		EVAP Monitor System Ok By Initial Purge Check.	29.8 g	6,553.5 g	correc
\$84	P0456	Fuel Tank Leak Test: Very Small Leak (CBUA).	0.0	0.170	Refer to DTC P0456 in the DTC summary table page 601

- DA NOWANION VOINGINGO INGINIO ON WASHINGO IN THE THROUGH A C. If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 − Read DTC Memory",
- Switch the ignition off.

## Monitor-ID \$3D: EVAP Purge Flow Monitor

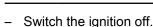
- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$3D".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$8C	P0496	Purge Flow Monitor Valve Open.	0.0 mA		Refer to DTC P0496 in the DTC summary table. ⇒ page 604
\$8D	P0441	Purge Flow Monitor Valve Closed.	0.0 mA		Refer to DTC P0441 in the DTC summary table. ⇒ page 597

If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21



### Monitor-ID \$41: Oxygen Sensor Heater Monitor Bank 1 – Sen-

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode oc. 2 ponents that are not continuously monitored Select "Monitor-ID \$41" AG. Volkswagen AG. Volkswa

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$850 Story		Oxygen Sensor Ceramic Temperature Bank 1 Sensor 1 Monitoring.	715° C	The state of the s	Refer to DTC P0135 in the DTC summary table. ⇒ page 561

#### Monitor-ID \$42: Oxygen Sensor Heater Monitor Bank 1 – Sensor 2

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$42".

- Select the desired "Test-ID".
- Check specified values at idle.

Shothog		perature Bank 1 Sensor 1 Monitoring.		llity with	DTC summary table. <u>⇒ page</u> <u>561</u>
If any fied v Memodiagn Memodiagn Memodiagn Monitor-sor 2	alues, roory" to coostic repory", page the the ignory state ignory state ignored the ignor	components or systems fail to meet efer to Diagnostic "Mode 03: Interrocheck for stored DTCs or the correspair procedure $\Rightarrow$ M3.3.3 ode 03 – Fige 21.  nition off.  Oxygen Sensor Heater Monitor Balascan tool.	ogating Fau ponding <u>Read DTC</u>	llt	nect to the correctness of info
50				lis the	
- Start	tne eng	ine and run at idle.		200	
		nostic Mode 06: Check / test the resare not continuously monitored".		1- Jugura	
Select "N	Monitor-	ID \$42".	GUNDO	5)	
- Selec	t the de	sired "Test-ID".	"OV KOJAD"		
		ied values at idle. • ĐA nəgsw.	SHO V Karribir kgo		
Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P0141	Oxygen Sensor Heating Internal Resistance Test Bank 1 Sensor 2.	0.0 Ω	20.4 kΩ	Refer to DTC P0141 in the DTC summary table. ⇒ page 569

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

## Monitor-ID \$43: Oxygen Sensor Heater Monitor Bank 1 - Sen-

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$43".



- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$81	P0147	Oxygen Sensor Heating Bank 1 Sensor 3 Internal Resistance Test.	0.0 Ω	32.4 kΩ	Refer to DTC P0147 in the DTC summary table. ⇒ page 576

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure 

  M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$71: Secondary Air Monitor

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

Select "Monitor-ID \$71".

- Select the desired "Test-ID".
- Check specified values at idle.

	DTC	Component or System	Min.	Max.	Additional Information
\$82	P0491	Blockage/Leakage Check Bank 1.	0.500	1.999	Refer to DTC P0491 in the DTC summary table. ⇒ page 603
\$84	P0491	Pressure Pulsation Check Bank 1.	0.148 kPa	32.767 kPa	Refer to DTC P0491 in the DTC summary table. ⇒ page 603
\$85	P0410	Pressure Check Bank 1.	0.0 kPasw	<sup>30</sup> 5,000.0 kPa	Refer to DTC P0410 in the DTC summary table. ⇒ page 593
\$8A	P2240	Tightness Check Bank 1.	0.0	1.352	Refer to DTC P2440 in the DTC summary table. ⇒ page 647
diagn Mem Switc	ostic re ory", pag th the ig	heck for stored DTCs or the correpair procedure ⇒ M3.3.3 ode 03 – ge 21 .  nition off.  Mis-Fire Cylinder Data	Read DTC		ect to the correctne
<u> </u>	ect the	scan tool.			96
	41	0			s of in
<ul><li>Start</li><li>Seled</li></ul>	ct "Diagr	ine and run at idle. one of the continuously monitored.	esults of co	m-	of information,
<ul><li>Start</li><li>Seled</li></ul>	ct "Diagr nts that	nostic Mode 06: Check / test the reare not continuously monitored".			of information in this o
<ul><li>Start</li><li>Select "N</li></ul>	ct "Diagr nts that Monitor-l	nostic Mode 06: Check / test the reare not continuously monitored".			of information in this occurrence.
<ul><li>Start</li><li>Select "N</li><li>Select</li></ul>	ct "Diagr nts that Monitor-l ct the de	nostic Mode 06: Check / test the reare not continuously monitored".			647  Republik Mithrespect to the correctness of information in the property of the correctness of information in the property of the property

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure 

  M3.3.3 ode 03 – Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$A2: Mis-Fire Cylinder Data

- Connect the scan tool.
- Start the engine and run at idle. 9
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored". O PENINGO TUBE

- Select the desired "Test-ID".
- Check specified values at idle.



Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B	P0301	Misfire Cylinder 1, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0301 in the DTC summary table. ⇒ page 582
\$0C		Misfire Cylinder 1, In This Drivath ing Cycle.	0.0 counts		Refer to DTC P0301 in the DTC summary table. ⇒ page 582

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTGs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 − Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A3: Mis-Fire Cylinder 2 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A3".

- Select the desired "Test-ID".
- Check specified values at idle.

Select "N	/lonitor-	ID \$A3".			The state of the s
- Selec	t the de	sired "Test-ID".			Mic Republication of the Control of
- Select the desired "Test-ID".  - Check specified values at idle.					
Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B	P0302	Misfire Cylinder 2, Average Value Over 10 Driving Cycles.	0.0 counts	65,535.0 ்counts	Refer to DTC P0302 in the DTC summary table. ⇒ page 583
\$0C	P0302	Misfire Cylinder 2, In This Driving Cycle.	0.0 counts	65,535.0 counts	Refer to DTC P0302 in the DTC summary table. ⇒ page 583

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

#### Monitor-ID \$A4: Mis-Fire Cylinder 3 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A4".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B		Misfire Cylinder 3, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0303 in the DTC summary table. ⇒ page 584



٦	Γest-ID	DTC	Component or System	Min.	Max.	Additional Information
	\$0C		Misfire Cylinder 3, In This Driving Cycle.	0.0 counts		Refer to DTC P0303 in the DTC summary table. ⇒ page 584

- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 - Read DTC Memory", page 21
- Switch the ignition off.

#### Monitor-ID \$A5: Mis-Fire Cylinder 4 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

#### Select "Monitor-ID \$A5".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.2	Additional Information
\$0B		Misfire Cylinder 4, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0304 in the DTC summary table. <u>⇒ page</u> <u>585</u>
\$0C		Misfire Cylinder 4, In This Driving Cycle.	0.0 counts		Refer to DTC P0304 in the DTC summary table. ⇒ page 585

- The ciness of information in the state of the soft cor If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

## Monitor-ID \$A6: Mis-Fire Cylinder 5 Data

- Connect the scan tool.
- Start the engine and run at idle.
- Select "Diagnostic Mode 06: Check / test the results of components that are not continuously monitored".

## Select "Monitor-ID \$A6".

- Select the desired "Test-ID".
- Check specified values at idle.

Test-ID	DTC	Component or System	Min.	Max.	Additional Information
\$0B		Misfire Cylinder 5, Average Value Over 10 Driving Cycles.	0.0 counts		Refer to DTC P0305 in the DTC summary table. ⇒ page 586
\$0C		Misfire Cylinder 5, In This Driving Cycle.	0.0 counts		Refer to DTC P0305 in the DTC summary table. ⇒ page 586



- If any of the components or systems fail to meet the specified values, refer to Diagnostic "Mode 03: Interrogating Fault Memory" to check for stored DTCs or the corresponding diagnostic repair procedure ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.
- Switch the ignition off.

# Diagnostic Mode 07 - Read Faults De-3.3.11 teu. ing Cycle 07 makes it possible to cheu. appeared during the current or leu. j). nding DTC is saved the first time a fault is detect. slode 07). If the fault is detected again by the end of the following driving cycle, a confirmed DTC is entered (output via Mode 03) and the MIL is activated. If this malfunction is not detected again by the end of the wagen AG does not guarantee of the driving cycle, the corresponding pending code will be deleted at the end of the driving cycle. tected During the Current or Last Driv-

Mode 07 makes it possible to check emissions-related faults which appeared during the current or last driving cycle (pending DTCs).

A pending DTC is saved the first time a fault is detected (output via Mode 07).



Depending on scan tool and protocol used, some of the information provided may be referred to by a different name.

## **Procedure**



If the engine does not start, crank the engine using starter for at least 5 seconds. Do not switch the ignition off afterward.

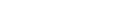
Select Diagnostic Mode 07: Check / test the results of components that are continuously monitored.

The number of pending DTCs or 0 malfunctions detected will be displayed on the scan tool screen.

DA negewealov Varnering of internage of inte

- Refer to the DTC tables below for the diagnostic repair procedures.
- ⇒ E3.4.1 ngine/Motor Control Module, 2010 MY", page 74
- ⇒ E3.4.2 ngine/Motor Control Module, 2011 MY", page 185
- ⇒ E3.4.3 ngine/Motor Control Module, 2012 MY", page 301
- ⇒ E3.4.4 ngine/Motor Control Module, 2013 MY", page 418
- ⇒ E3.4.5 ngine/Motor Control Module, 2014 MY", page 535
- Switch the ignition off.

Rep. Gr.ST - Generic Scan Tool



## 3.3.12 Diagnostic Mode 08 – Request Control of On-Board System, Test or Component

Not supported on this vehicle

#### 3.3.13 Diagnostic Mode 09 - Read Vehicle Information

Diagnostic Mode 09 makes it possible to access vehicle-specific information from the ECM and the TCM (where applicable).



## Note

nending on scan tool and, I the information provided may be ne.

st requirement

No DTC's stored in the DTC memory an AG. Volkswagen AG does not guarantee of accedure

'a scan tool Note of the provided to t Depending on scan tool and protocol used, Diagnostic Mode 09 and the information provided may be referred to by a different name.

## Test requirement

#### **Procedure**

- Connect the scan tool

The following table is a numerical list of all "Test-IDs" that may be selected.

Test-ID	Diagnostic text
\$02:8	Vehicle identification number e.g.
al purp	◆ A different 17 digit number will be displayed for each vehicle
\$04: 💆	Calibration identification e.g.
COMIT	◆ Engine/Motor Control Module
	◆ Transmission Control Module
\$06:	Calibration verification number (check sum) e.g.
	◆ EC5AE460 the check sum is different for every control module version
\$08:	In Use Performance Tracking (CBUA/SULEV only)
\$0A:	ECU module acronym and text name

Camina Mada	CURRORTER
Service Mode	ISUPPORTED
ΦO Δ	
\$0A	
Ψ	

Switch the ignition off.



#### 3.3.14 Diagnostic Mode 0A – Check Permanent DTC Memory



Note

The following is a generic explanation of the requirements, coverage, and operation of Mode 0A.

Mode 0A may only be supported exclusively by OBD control modules in US vehicles. Mode 0A may not be supported in EOBD vehicles, meaning the control module may not send a response here.

Mode 0A - Check Permanent DTC Memory (Request emissions-related diagnostic trouble codes with permanent status after code clear).

Permanent Fault Codes From MY 2010 with Phase-In conforming to CCR 1968.2 (d)(2.2.5): 50% from MY 2010 / 75% from MY 2011 / 100% from MY 2012 The vehicle only participates in Phase-In if all of the OBD-relevant control modules in the vehicle meet these requirements.

Mode 0A enables the request of all OBD-relevant faults with the status "Permanent Fault Code"

- Permanent Fault Codes are Confirmed Fault Codes that are currently activating the MIL. That means faults that are still displayed in Mode 03 but no longer activate the MIL (History Fault Codes) are not Permanent Fault Codes.

- Permanent Fault Codes are updated in Mode 0A at the same time as NVRAM storage immediately after switching the ignition off. A newly detected Permanent Fault Code is only visible after switching the ignition off/on in Mode 0A.

- Permanent Fault Codes may only be erased in the control?

Mode 0A enables the requested as long as the last diagnostic result was a PASS and the MIL is no longer activated by this feath. The Permanent Fault has been found to be the same of the participant.

- module after they are corrected as long as the last diagnostic result was a PASS and the MIL is no longer activated by this fault. The Permanent Fault Codes should be erased from Mode 0A at the same time the MIL switches off when the ignition is switched off/on.
- Permanent Fault Codes may not be erased by clearing the DTC memory or disconnecting the power supply. Storage in NVRAM is required.
- Permanent Fault Codes may only be erased after clearing the DTC memory under the following conditions: - As long as no FAIL diagnostic result was detected for a Permanent Fault Code - and at least one PASS diagnostic result was detected - and the Minimum Trip Conditions for a General Denominator (without considering high/ambient temperature) were met in this phase in any DCY after erasing the DTC memory.
- The engine control module relays the message "Minimum Trip conditions met" to all other OBD control modules via CAN: CAN message OBD\_01, Byte 8, Bit 4: OBD\_Minimum\_Trip
- Permanent Fault Codes may NOT be erased if the diagnostic result is FAIL after clearing the DTC memory. A Pending Fault Code should be stored and the DTC memory line should be overwritten with new Freeze Frame data. (Exception: If the Pending Fault Code is corrected without a Confirmed Fault Code being detected, the Permanent Fault Code may also be erased under the conditions described below.)
- Permanent Fault Codes should be erased in engine control modules after Update Programming. At this time, all readiness bits (Mode 01 PID \$01) must be reset to "not complete" [ (g)



A(D)]. Permanent Fault Codes should not be erased control modules with Comprehensive Components (Cc. as a single readiness bit if the identical program/data status is being programmed. If a diliferent program/data status is being programmed, Permanent Fault Codes should be erased after Update Programming.

"he procedure in Mode 01 through Mode 09 and in the servister is NOT affected by implementation of the Permanent Codes.

"odes."

"Codes after code clear Service des: can only be erased at the "ECM keep alive time) if all the 1:

after code clear, the vehi-



- ⇒ E3.4.1 ngine/Motor Control Module, 2010 MY", page 74
- ⇒ E3.4.2 ngine/Motor Control Module, 2011 MY", page 185
- ⇒ E3.4.3 ngine/Motor Control Module, 2012 MY", page 301
- ⇒ E3.4.4 ngine/Motor Control Module, 2013 MY", page 418
- ⇒ E3.4.5 ngine/Motor Control Module, 2014 MY", page 535



#### Engine/Motor Control Module, 2010 MY 3.4.1

3.4.1		C/WICTOI COIN	oi Module, 2010	an AG	.Volkswagen AG.,	
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P000 A "A" Cam- shaft Posi- tion Slow Re- spons e Bank 1	VVT Actuator Intake Slow Response	between target position vs. actual position > 8° CRK (CBUA)	• Time after engine start > 1.5 – 3.0 s • Engine speed 600 – 6,320 RPM • Oil temperature –48 – 143° C  Frequency (normal operation) 7.0 times [-] (CBTA)  • Frequency (normal operation) 4.0 times [-] (CBUA) • Or (CBTA) • Frequency (CSM) 1.0 times [-] (CBTA)		- 5 DCA	- Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 amshaft Adjustment Valve 1 N205. Checking", page 672.  - Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40. Checking" page 674.  - Check the Engine Speed Sensor -G28 Refer to ⇒ E3.6.9 ngine Speed Sensor G28. Refer to ⇒ Checking", page 686.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
"A" Cam- shaft Posi- tion Actua- tor "A" Con- trol Cir- cuit/ Open Bank	VVT Actua- tor Intake Open Cir- cuit	• Signal volt- age > 4.40 – 5.60 V	<ul> <li>Camshaft valve off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Camshaft Adjustment Valve 1 - N205 Refer to ⇒ C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672 .
1						- Check the Engine Speed Sen- sor -G28 Refer to
			orised by Volkswagen AG. Vol	kswagen AG doe	s not guarante	sor G28, Checking", page 686  - Check the Camshaft
		diffe diffes sauth	orised by Volkswagen AG. Vol		SC OF GCCE	Position Sensor - G40 Refer to
		rt or in whole, is				shaft Position Sensor G40 Checking", page 674
		Copyright of the commercial purposes, in pa	Protected by copyright		ISANO VVO INDINUGOO jing	674  the correctness of information in this cooking

				Jolkswa	3	not not
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
"A"	VVT Actuator Intake Target Er- ror	<ul> <li>Difference between target position &gt; 8 - 12° CRK (CBTA)</li> <li>Difference between target position vs. actual position &gt; 8° CRK (CBUA)</li> <li>And</li> <li>Adjustment angle &gt; 3° CRK</li> </ul>	<ul> <li>Time after engine start &gt; 1.5 – 3.0 s</li> <li>Engine speed 600 – 6,320 RPM</li> <li>Oil temperature – 48 – 143° C</li> <li>Frequency (normal operation) 7.0 times [-] (CBTA)</li> <li>Frequency (normal operation) 4.0 times [-] (CBUA)</li> <li>Or (CBTA)</li> <li>Frequency (CSM) 1.0 times [-] (CBTA)</li> </ul>	• 21.0 (CBTA) • 12.0 s (CBUA) • Multiple	oud e	- Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 amshaft Adjustment Valve 1 N205. Checking", page 672.  - Check the Engine Speed Sensor -G28 Refer to ⇒ E3.6.9 ngine Speed Sensor G28. Checking", page 686. Checking", page 680. Checking", page 680. Checking", page 674.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Crank shaft Posi- tion - Cam-	Camshaft Position Sensor In- let Angular Offset Check	<ul> <li>Permissible deviation &lt; -13.5° CRK</li> <li>Or</li> <li>Permissible deviation &gt; 13.5° CRK</li> </ul>	olkswagen AG does not gua <sub>ra</sub>	• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sensor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686.
Bank 1 Sen Son Solo of Municer of the Property			• Time after engine start > 5.0 s • Heater comman-	3 liddill	with respect to the correctness of in	- Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.
or commercia	Reguldo WOU	ເ <sub>ດດວງໃຊ້ pອງລອງດາ</sub> ຕີ	S S S S S S S S S S S S S S S S S S S	Sundoo illaunoo sik	Normation	- Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205. Checking"
HO2S	Sensors Heater Front Open Circuit	Heater voltage 2.34 – 3.59 V	Time after engine start > 5.0 s Heater commanded off	0.5 s     Continuous	• 2 DCY	Checking", page 672.  - Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  3 O3.6.23 xy- gen Sensor
33. 1						1 Before Catalytic Converter GX10, Checking", page 716.



er Fro	eygen ensors eater ont Short Ground	age < 2.34 V	<ul> <li>Time after engine start &gt; 5.0 s</li> <li>Heater commanded off</li> </ul>	0.5 s     Continuous	• 2 DCY	Check the     Oxygen     Sensor 1     Before Cata- lytic Con- verter -	
sor 1						GX10 Refer to  O3.6.23 xygen Sensor	
er Fro Con- To trol Plu Circuit High	ensors eater ont Short Battery	Heater volt- age > 3.59 V	Time after engine start > 5.0 s Heater commanded on	OUS	• 2 DCY agen AG. Volkswage	Sensor 1	Oracleptan,
Bank 1 Sen- sor 1			ded on hole, is not be minimized by the second of the seco			O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.	liability with respect to the correctness
			and the second s	Cred by copyright	Broid	Before Catalytic Converter - GX10 Refer to  3 O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.	s of information in this document.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heater Control Circuit Bank 1 Sept sor 2	8 <sub>III</sub>	No\\ <b>5.50 V</b>	Engine speed >     Was 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Heater commanded off  Particular of the commanded off  Time after engine start > 5.0 s (CBUA)  Heater commanded off	Or RCCRUTERO HIS HILLIAMITA	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.
		<sup>1</sup> Alold	.DAMA			

## Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

DTC /	Monitor «	Malfunction Cri-	Secondary Parame-	Monitoring	MIL Illumina-	Component Di-
De- scrip- tion	Strategy Description	teria and Threshold Val- ue	ters with Enable Conditions	Length Time	tion	agnostic Proce- dure
	e of commercial purpos	• Heater voltage < 3.0 V	Engine speed > 80 RPM (CBTA)  Time after engine start > 5.0 s (CBUA)  Heater commanded off  Page 10-10-10-10-10-10-10-10-10-10-10-10-10-1	• 0.5 s • Continuous	• 2 DCY	ter Catalytic Converter - GX7 Refer to



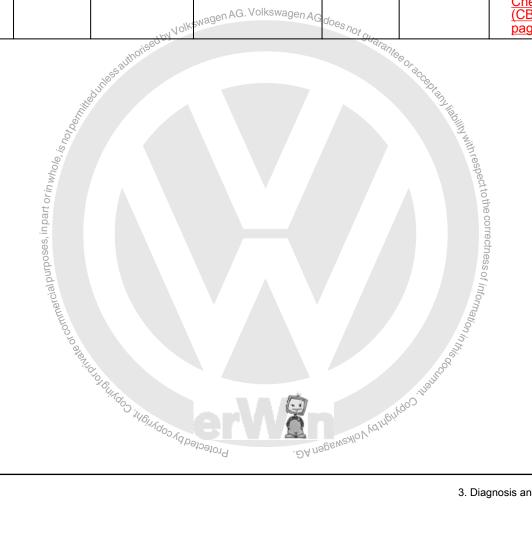
DTC / Monitor Strategy scription	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0038 Oxygen HO2S Sensors Heater er Rear 2 - Control Circuit High Bank 1 Sensor 2	Heater current 2.70 –     5.50 A	Engine speed > 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Heater commanded on	O.5 s     Continuous  Makewagen AG. Vo	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)".
	, ral purposes, in part or in who,	The state of the s	Protected	- DA riegenve.	page 680. Is like with respect to the correctness of information in the co







DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er Con- trol	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Ground	• Heater voltage < 3.0 V	<ul> <li>Engine speed &gt; 80 RPM</li> <li>Heater commanded off</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
er Con- trol	S S S S S S S S S S S S S S S S S S S	Heater current 2.70 – 5.50 A stimology with the state of the stat			*Suaranteeoraceoraceoran	O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic
Ambi-	Ambient Air Tempera- ture Sensor Short To Battery / Open Cir- cuit	Ambient air temperature < -50° C	CAN active	• 6.0 s • Multiple	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  ⇒ O3.6.21 utside Air Temperature Sensor G17. Checking", page 711 .  - Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance. Checking", page 676 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0071 Ambient Air Temperature Sensor Circuit "A" Rang e/ Performanc e		IAT at engine start (depending on engine off time) < 24.75° C  • And • Diff. IAT vs. AAT at engine start (depending on engine off time) > 24.75° C  • And	6.0 h  Blockheater  ECT >= 143° C  Time after engine start 2.0 s  Or  Diff. ECT vs. ECT outlet <= 20° C  Time after engine start 2.0 s  Solar radiation case 1:  AAT @ start <= en A2° C  Minus	central liability with respect to the correctn	• 2 DCY	<ul> <li>Check the Outside Air Temperature Sensor - G17 Refer to</li> <li>O3.6.21 utside Air Temperature Sensor G17, Checking", page 711 .</li> <li>Check the CAN-Bus terminal resistance. Refer to</li> <li>C3.6.4 AN-Bus Terminal Resistance, Checking", page 676 .</li> </ul>
nmercial pur			<ul><li>Vehicle speed &gt; 20 km/h</li><li>For time &gt; 5.0 s</li></ul>	of inform		
30 to alkally to Jally	Ados Honados Aqu	Blobolo <sup>II</sup>	- DA negeweallo V Volkewagen AG.	Trinthis Co.		



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Ambi-	Ambient Air Tempera- ture Sensor Short To Ground	Ambient air temperature > 87° C	CAN active	• 6.0 s • Multiple	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  ⇒ O3.6.21 ut- side Air Temperature Sensor G17, Checking", page 711  - Check the CAN-Bus terminal re-
			, tedynese author	<sub>Sed</sub> by Volkswage	n AG. Volkswagen A	terminal resistance. Refer to  Go 3.6.4 AN- Bus Terminal Resistance. Checking". page 676
Mani- fold	Manifold Pressure Sensor Ra- tionality Check Low	Difference manifold pressure - lower threshold model < 0.0 hPa     Model range 0.0 – 800.0 hPa	• Time after en-	<ul><li>450.0 s</li><li>Multiple</li></ul>	• 2 DCY	Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Mod-
Pres- sure Sen- sor Circuit	Manifold Pressure Sensor Ra- tionality Check High	Difference manifold pressure - lower threshold model > 0.0 hPa  Model range 650.0 - 1,080.0 hPa	gine start n.a.			ule GX3 / J338, Checking", page 726 .  - Check the Intake Manifold Sensor - GX9 Refer to ⇒
	Manifold Pressure Sensor Ra- tionality Check	Diff. altitude sensor sig- nal vs. mani- fold pressure signal at en- gine start > 60.0 hPa	gine start < 25.0%   s	Sundos na população p	A	I3.6.15 ntake Manifold Sensor GX9, Checking", ueo page 698.
	Manifold Pressure Sensor Adaptation Value Mon- itoring	Offset value manifold pressure for load calcula- tion in driv- ing condition range 2.0 > 55.0 hPa	<ul> <li>Driving condition range 1 (omsna):</li> <li>Engine speed &lt; 800 RPM</li> </ul>			



DTC / Monitor Strategy Scription tion  Malfunction Criters with Enable Composition Scription Under Strategy Scription Criters with Enable Conditions Condition Criters with Enable Composition Conditions Conditions Composition Conditions Conditions Composition Conditions Composition Conditions Conditions Composition Conditions Conditions Conditions Conditions Conditions Conditions Composition Conditions Co
offset value manifold pressure for load calculation in driving condition range 2.0 < -60.0 hPa  • Offset value manifold pressure for load calculation in driving condition range 2.0 < -60.0 hPa  • Delta adaptation value range 1.0 < 0.10 kg/h  • For time 1.0 s  • Driving condition range 2 (opsra):  • Engine speed > 1,400 RPM  • Manifold pressure < 425.0 hPa  • For time 8.0 s  • Driving condition range 3 (opua):  • Desired mass flow > 40.0 kg/h  • Manifold pressure > 550.0 hPa  • Delta adaptation value range 3.0  • 2.97 hPa  • For time 5.0 s  • General:  • Engine operation in every driving condition >= 2.0 times  • Diagnosis evalor purge system not active  • Engine speed 500 − 6,000 RPM  • Manifold pressure > 0.0 hPa  • Ratio manifold pressure > 0.0 hPa  • Ratio manifold pressure to ambient pressure < 0.85 [-]



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Manifold Absolute Pressure/	Manifold Pressure Sensor Short To Ground	• Signal volt- age < 0.20 V		<ul><li>1.0 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to ⇒	
Baro- metric Pres- sure Sen- sor Circuit Low						T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726	
Low			, orisi	adby Volkswagen	AG. Volkswagen AG	- Check the Intake Manifold Sensor - GX9 Refer to Uarante	
D0409	Manifold	Signal volt-	a dina di dina	. 100	2 DCV	I3.6.15 ntake Manifold Sensor GX9, Checking", page 698	Con and liability
Mani- fold	Pressure Sensor Short To Battery / Open Circuit	• Signal volt- age > 4.86 V	part or in whole, is n	Continuous	· ZDCY	Throttle Valve Control Module - GX3 / J338 Refer to	with respect to me co
Baro- metric Pres- sure Sen- sor Circuit High			Copyright of the search of the			T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726	A dry liability with respect to the concerness of information in this object.
i ligii			00 to 9 knild to foliation			- Check the Intake Manifold Sensor - GX9 Refer to ⇒	on in this cook
			746/	Protected by Copy	.ĐAn	I3.6.15 ntake Manifold Sensor GX9, Checking", page 698.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Intake Air Temperature Sensor 1 Circuit Rang e/ Performanc	Intake Air Temperature Rationality Check	Diff. ECT vs. IAT at engine start (depending on engine off time) > 24.75° C  And Diff. IAT vs. AAT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) < 24.75° C	<ul> <li>Time after engine start 2.0 s</li> <li>Or</li> <li>Diff. ECT vs. ECT outlet &lt;= 20° C</li> <li>AG. Volkswagen AG of the start o</li></ul>	• 60.0 s • Once / DCY  Pes not guarantee of	• 2 DCY	<ul> <li>Check the Intake Manifold Sensor - GX9 Refer to</li> <li>⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698.</li> <li>Check the Engine Coolant Temperature Sensor -G62 Refer to</li> <li>⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.</li> <li>Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to</li> <li>⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to</li> <li>⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.</li> </ul>
		1-010	Protein Page	Q1*.		



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Intake Air Tempera- ture Sensor Short To Ground	• IAT > 130° C		• 5.0 s • Multiple	• 2 DCY	Check the     Intake Manifold Sensor -     GX9 Refer     to
Sen- sor 1 Circuit Low Bank						∃3.6.15 ntake Manifold Sensor GX9, Checking", page 698.
'						- Check the Engine Cool- ant Temper- ature Sensor -G62 Refer to
			agen AG	i.Volkswagen A(	ido-	E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.
			sauthorised by Volkswes		Sues not guarantee o	- Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to
		s, in part or in whole, is horb	sauttorised by Volkswagen AG			E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking3, page 685
		or commercial purpose	Protected by copyright, Copy			page 6855 information in this doctor.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	Lide	Component Diagnostic Procedure
P0113 Intake Air Tem ture Sen sor Circuit High		• IAT < -46° C	Johnsagen AG.	• 5.0 s • Multiple	OCY  Prespect to the correctness of information in this co.	- Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .  - Check the Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking",
						page 683.  - Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to  ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.



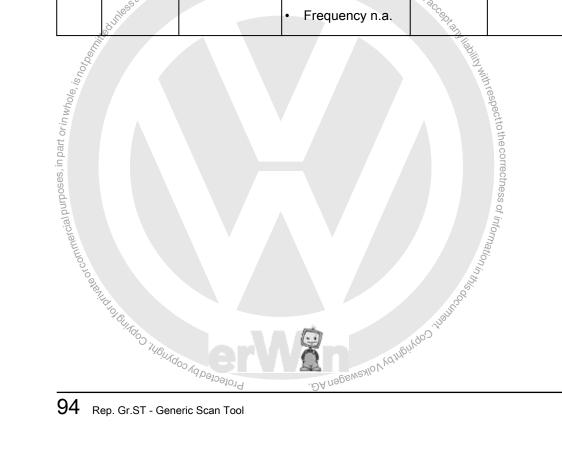
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
gine Cool-	Engine Coolant Tempera- ture Sensor Stuck Low	No change of commercial purposes, in part or in whole, is not being a signal and in part or in whole is not being a signal and in part or in whole is not being a signal and in part or in whole is not being a signal and in part or in part	ECT @ start n.a. ECT 50 – 75° C Cold start n.a. Temp_02 Substitute ECT > -45° C Driving condition L: Vehicle speed 0 – 20 km/h Mass air flow 4.0 – 40.0 kg/h Time required / > 10.0 s Frequency 3.0 times And Driving condition H: Vehicle speed 50 – 150 km/h Mass air flow 32.0 – 352.0 kg/h Time required / > 40.0 s Frequency once	• 70.0 s • Once / DCY		- Check the Engine Coolant Temperature Sensor G62. Checking". page 683. Checking". Page 683. Refer to Sensor on Radiator Outlet -G83. Refer to Sensor on Radiator Outlet -G83. Refer to Sensor on Radiator Outlet G83. Checking". page 685. Check the engine coolant thermostat. Refer to appropriate repair manual.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Engine Coolant Tempera- ture Sensor Stuck High	$\tilde{Q}$	<ul> <li>Temp_01</li> <li>ECT @ start n.a.</li> <li>ECT 105 - 140° C</li> <li>Cold start n.a.</li> <li>Temp_02</li> <li>Substitute ECT &gt; -45° C</li> <li>Driving condition L:</li> <li>Vehicle speed 0 - 20 km/h</li> <li>Mass air flow 4.0 - 40.0 kg/h</li> <li>Time required / &gt; 10.0 s</li> <li>Frequency 3.0 times</li> <li>And</li> <li>Driving conditional CH: Nagoration of the Nagoration of t</li></ul>	gen AG does not g	Warantee Or accept and late	
	ordal purposes, in part or in W	STEP STAND TO BRAILE TO STANDING	Protected by cop	Volkewagen AG.	Manufanto O Julento O Co	with respect to the correctness of information in the



DTC / Monitor De- scrip- tion Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Engine Coolant Temperature Senso Stuck In Range	No change on signal n. a.	<ul> <li>Cold start detected</li> <li>Stuck high n.a.</li> <li>Temp_01</li> <li>ECT @ start n.a.</li> <li>Temp_02</li> <li>Substitute ECT n.a.</li> <li>Driving condition L:</li> <li>Vehicle speed n.a.</li> <li>Mass air flow n.a.</li> <li>time required / n.a.</li> <li>Frequency n.a.</li> <li>And</li> <li>Driving condition H:</li> <li>Vehicle speed n.a.</li> <li>Time required flow n.a.</li> <li>Time required flow n.a.</li> <li>Time required flow n.a.</li> <li>Time required flow n.a.</li> <li>Frequency n.a.</li> </ul>	• 2.0 s • Once / DCY		





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
En- gine	Engine Coolant Tempera- ture Sensor Short To Ground	• ECT > 140° C		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.
		omercial purposes, in part or in Whole is	50 bo	<sub>SW</sub> agen AG. Voll	kswagen AG does no	- Check the Engine Coolant Temperature Sensor on Radiator Outlet G83. Refer to Sensor on Radiator Outlet G83. Checking", page 685 Check the engine coolant thermostat. Refer to appropriate repair manual.
			O TO SERVICE TO THE WAS A STATE OF THE SERVICE OF T	Geloejond Geloejond	. DA nagsweyl	ON MOUNTAIN OO HOUNDAND OO HOU

## Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

<u> </u>	Generic Sca	an Tool - Edition (	07.2022 wswagen AG. Volkswa	<del>gen AG de</del>		
DTC / De- scrip- tion	Monitor Strategy Description	teria and	Secondary Parameters with Enable Conditions	Monitoring Length	MIL Illumina-	Component Diagnostic Procedure
En- gine	Battery / Open Circuit	• ECT < -40°	Protected by	• 2.0 s • Multiple	· 2 DCY RATE	ant Temper- ature Sensor -G62 Refer to  E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.  Check the
tle/	sition Sen- sor 1 Ra- tionality Check	<ul> <li>TPS1-TPS2 &gt; 6.30%</li> <li>And</li> <li>Actual TPS1 - calc. value &gt; actual TPS2 - calc. value</li> <li>Or</li> <li>TPS1 - calc. value &gt; 9.0%</li> </ul>	• Engine speed > 480 RPM	<ul><li>0.3 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .



			50			· Ø.
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and S Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0122 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit Low	Throttle Position Sensor 1 Out Of Range Low	age volumercial purposes, in part oring		• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module GX3 / J338-Checking Checking Tage 726
P0123 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit High	Throttle Position Sensor 1 Out Of Range High	• Signal volt- age > 4.81 V	O BUNGOD ; WE WAS A DESCRIPTION OF THE PROPERTY OF THE PROPERT	• 0.1 s • Multiple	OA nageweallo V to Int	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
P0130 O2 Sen- sor Circuit Bank 1 Sen- sor 1	Oxygen Sensors Front Out Of Range	• O2S ceramic temp. < 640° C	<ul> <li>Modeled exhaust temp &gt; 300° C</li> <li>Fuel cut off not active</li> </ul>	• 15.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0131 O2 Sen- sor Circuit Low Volt- age Bank 1 Sen- sor 1	Sensors Front Sig- nal Range	Short to ground  Virtual mass (VM) < 1.75 V  Or  Nernst voltage (UN) < 1.50 V  Or  Adjustment voltage (IA) < 0.30 V  Adjustment voltage (IP) < 0.30 V	unlass authorised by Volkswage	• 5.0 s • Multiple  AG. Volkswage	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to O3.6.23 xygen Sensor 1 Before Catalytic Converter GX10. Checking page 716
O2 Sen- sor	Oxygen Sensors Front Sig- nal Range Check	<ul> <li>Short to battery</li> <li>Virtual mass (VM) &gt; 3.25 V</li> <li>Or</li> <li>Nernst voltage (UN) &gt; 4.40 V</li> <li>Or</li> <li>Adjustment voltage (IA) &gt; 7.0 V</li> <li>Or</li> <li>Adjustment voltage (IP) &gt; 7.0 V</li> </ul>	O BUINDOO WA DE JOE JOE JOE JOE JOE JOE JOE JOE JOE JO	• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter OX.10. Refer to O3.6.23 xy-gen Sensor 1 Before Catalytic Converter OX.10. Checking", page 716.

DTC? Monitor De- Scrip- tion Monitor Strategy Descriptio	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Length Conditions	g MIL Illumina- tion	Component Diagnostic Procedure
P0133 Oxygen Sensors Front Response Circuit Slow Response Bank 1 Sensor 1	ratios R2L and L2R < 0.25 [-] (CBTA)  • Lower value of both area ratios R2L and L2R < 0.20 [-] (CBUA)  • And	<ul> <li>ECT &gt;= 10° C</li> <li>Catalyst temperature &gt;= 450° C</li> <li>Lambda control set-point prior to diagnostic fuel steps A/F-ratio stoichiometric</li> <li>Relative fuel amount from wall applied compen-</li> </ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  → O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.

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P0135 Oxygen on active  P0135 Oxygen O2 Sensors Front Out Heater Cutt Heat Pront Rationality Check (Sensor Heating Up)  P02 Sensor Front Rationality Check (Sensor Heating Up)  P035 Oxygen on 35.0 s  P035 Oxygen on active on ac
O2 Sensors temperature gas temp. > 550° Multiple AG. Volkswagen A G. Volkswage
Oxygen Sensors Heater Front Rationality Check (Sensor Heating Up)  Oxygen Sensor Senso



P0136 Oxygen O2 Sensor's Sensor's Sor' O2S Signal Bank 1 Circuit 1 Sensor's Sor' 2 Check in O2S Signal Check 1 Sor' 2 Check in O2S Signal Check 2 Oxygen Sensor voltage 2.0 ∨ Or Sensor voltage Check 2 Check 3 Oxygen Sensor voltage 2.0 ∨ Or Sensor voltage Check 3 Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor voltage 0.50 − 1.08 ∨ Oxygen Sensor 1 After Catalytic Converter GX7- Refer to Sensor tor Individual Sensor In	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
7/00/20 GO NO/11	O2 Sensor PCircuit CBank CSensor 2 (F	Sensors Rear 2 - Point - LSF D2S Signal Check - Circuit Con- inuity Heater Coupling Check)	age one step at heater switching > 2.0 V  And  Number of heater coupling >= 6.0 times [-]	ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s (CBTA)  For time > 22.0 s (CBUA)	• Multiple	Not guarantee or accept	Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Checking



DTC / Monitor De- Strategy teria and Scrip- tion Description Threshold Val- ue	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0137 Ozygen Sensors Sensor Circuit Low Voltage Bank 1 Sensor 2 Sensor 2 Sensor Sear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Short To Ground, Core Connection Signal Wires)  Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3 measurements) < 0.01 V	<ul> <li>Sensor voltage 0.50 - 1.08 √</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a. (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt; 1,263° C</li> <li>For time n.a. (CBTA)</li> <li>For time p.a. (CBTA)</li> <li>For time p.a. (CBTA)</li> </ul>			- Check the Oxygen Sensor 1 After Catalytic Converter GX7. Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)", page 680.  → Vuelogen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)", page 680.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	<b>MIL Illumina-</b> <b>tion</b> G. Volkswagen AG	Component Diagnostic Procedure	
Sen- sor Circuit High Volt- age Bank 1	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Out Of Range High (Short To Battery Plus)	<ul> <li>Signal voltage &gt; 1.08 V</li> <li>For time &gt; 5.0 s</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Lambda set value &gt; 0.995 [-]</li> </ul>	5.0 s • Multiple	• 5 DCA	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxy-gen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)", page 680.	at and liability with respect to the correctness of information in this occur.



P0139 Oxygen O2 Sensors Sen- Rear (Binasor ry LSF) Circuit Check Of Slow Transient Re- Time At	EWMA fil- tered transi-	Rich voltage (en-		1		
spons e Bank 1 Sensor 2	ent time at fuel cut off > 0.6 s  O2 voltage between 201.0 - 401.0 mV  Number of checks (initial phase) >= 4.0 [-]  Number of checks (step function) >= 3.0 [-]	<ul> <li>able) &gt;= 548.0 mV</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust</li> </ul>	• 4.5 s • Multiple	• 1 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .	
104 Rep. Gr.ST - Gene		Trigger for step change: delta transient time no.3 s  White the state of the s	Aginology Malagasic		TAfter Catalytic Converter GX7, Checking", page 713.	cot and liability with respect to the correctness of information in this cock,



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0140 O2 Sensor Circuit No Activity Detected Bank 1 Sensor 2	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Signal Line Open Circuit)	• Signal volt- age 0.40 – 0.60 V • For time > 3.0 s	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s (CBTA)</li> </ul>	• 5.0 s • Multiple		- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter GY999 Converter GY999 Converter GY999 Converter GY9999 Converter GY9999 Converter GY999999999999999999999999999999999999
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	tore with Enable	Time	MIL Illumina- tion	Component Diagnostic Procedure
or commercial purposes, in part or in whole, is hot be.	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity (Sensor Ground Line Open Circuit)	<ul> <li>Internal resistance &gt; 40,000.0 Ω</li> <li>And</li> <li>Exhaust temperature &gt; 670° C</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Valid Ri-measurements &gt; 10.0 times [-]</li> </ul>	• 50.0 s • Multiple	with respect to the correctness of $inform$ etion $i$	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0141 O2 Sen- sor Heat-	Oxygen Sensors Heater Rear 2 - Point - LSF Out Of Range	Heater resistance     1,200.0 –     32,400.0 Ω     (CBTA)	Modeled exhaust gas temp. 200 – 680° C  Engine shut-off-time > 120.0 s  (During ECM keep alive-time after ignition off) < 500.0 s (CBTA)  (During ECM keep alive-time after ignition off) en A < 1,200:0 s AG does (CBUA)  Number of checks 10.0 [-]  Fuel cut off not active  Heater commanded on	Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxy-gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor	Circuit Continuity (Heater Coupling Check)	<ul> <li>Delta voltage one step at heater switching &gt; 2.0 V</li> <li>And</li> <li>Number of heater coupling &gt;= 6.0 times [-]</li> </ul>	tion  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s  Or  Heater power >= 24.0%  For time > 18.0 s  General:  Dew point exceeded  For time > 10.0 s	• 60.0 s • Multiple	en AG does not guar	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Checking (CBUA)", page 713 .
		or commercial purposes, in part or in whole, is not be	For time > 0.0 s	au <sub>d</sub>	-DA negeweallo V koy	A liability with respect to the correctness of information in this or the correctness of information in the





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Low Volt- age Bank 1	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity (Short To Ground, Core Con- nection Sig- nal Wires)	<ul> <li>Signal voltage &lt; 0.06 V</li> <li>For time &gt; 3.0 s</li> <li>And</li> <li>Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measure ments) &lt; 0.01 [V]</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 - 1.08 V AG.</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a.</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time n.a.</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Fuel cut off not active</li> <li>Catalyst purge not active</li> </ul>			CBUA)", page 680.  - Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to  O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri-	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Out Of Range High (Short To Battery Plus)	Signal voltage > 1.08 V For time > 5.0 s  Standard Dillado Tubilado Tubilado Tubilado Tubilado Tubilado Tubilado Tubilado	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Lambda set value &gt; 0,995 [-]</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - C465 Refer to Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to Sensor 1 After Catalytic Converter GX7 Refer to 1 After Catalytic Converter GX7, Checking", page 713 .



DTC / Monito De- scrip- tion Descripti	y teria and	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0145 Oxygen O2 Sensors Sensors Circuit Slow Respons e Bank 1 Sensor 3	fuel cut off > 1.5 s  In voltage range 201.0 - 401.0 mV  Number of checks (initial phase) >= 4.0 [-]	<ul> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 - sensor internal resistance &lt;= 131,070.0 Ω</li> <li>Or</li> <li>Trigger for step change: delta transient time &gt; 0.3 s</li> </ul>	• 4.5 s • Multiple  s not guarantee or a	or and liability with respect to the correctness of information in the cor	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Di- agnostic Proce- dure
O2 Sen- sor Circuit No Activi- ty De- tected	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Signal Line Open Circuit)	Signal voltage 0.40 – 0.60 V For time > 3.0 s And Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) >= 2.80 V	0.50 – 1.08 V     Case 2: sensor theoretical ready for operation     For time > 12.0 s     Sensor sufficient heated up if exhaust temperature >= 1,263° C     For time > 18.0 s	• 5.0 s • Multiple	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Ground Line Open Circuit)	sistance > 40,000.0 Ω  • And • Exhaust temperature > 670° C	ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s  Or  Heater power >= 24.0%  For time > 18.0 s  General:  Dew point exceeded  Valid Ri-measurements > 10.0 times [-]	• Multiple	swagen AG does no	t guarantee of acceptany liability will.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0147 O2 Sen- sor Heat- er Cir- cuit Bank 1 Sen- sor 3	Sensors Heater Rear 2 - Point - LSF Out Of Range	Heater resistance 1,200.0 – 32,400.0 Ω  The standard resistance is the standard resistance in the standard resistance in the standard resistance in the standard resistance in the standard resistance is the standard resistance in the standard resistance is the standard resistance in the st	<ul> <li>Modeled exhaust gas temp. 200 – 680° C</li> <li>Engine shut-off-time &gt; 120.0 s</li> <li>(During ECM keep alive-time after ignition off) &lt; 500.0 s</li> <li>Number of College</li> <li>Fuel cut off not active</li> <li>Heater commanded on</li> </ul>	Multiple	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to C3.6.22 xygen Sensor 1 After Catalytic Converter GX7 Refer to C3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Ghecking", page 713 .
	ECM: EGAS Module Function Monitoring: Injection Time ECM: EGAS Module Function Monitoring: Lambda Mode ECM: EGAS Module Function Monitoring: Control	Comparison with fuel quantity incorrect  Internal check failed  Correction factor incorrect	• Internal engine speed > 1,200 RPM	• 0.5 s • Continuous	• 2 DCY	Check for contaminated/aged fuel or possible high concentration of alcohol in fuel (above 15%). Poor quality fuel will also increase consumption. Replace with fresh fuel if believed to be contaminated. Refer to appropriate repair manual.  Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Fuel quantity incorrect  incorrect  ities authorises  ities a	Jby Volkswagen A.G. Volkswa	agen AG does not	Quarantee or acceptant	O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
	s, in part or in w.b.	(ASO) (SOC)	Secondary Parameters with Enable Conditions  Not			If fuel quality is adequate, replace the Engine/ Motor Control Module. Refer to appropriate repair manual.
P0201 Cylinder 1 Injector "A" Circuit	Válves odjad Open Cir- cuit	age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	Continuous		Fuel Injectors. Refer to F3.6.13 uel Injectors. Checking".
P0202 Cylin- der 2 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• Continuous	· 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0203 Cylin- der 3 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
Cylin- der 4 Injec- tor "A" Circuit	cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors. Checking", page 694.
P0205 Cylin- der 5 Injec- tor "A" Circuit	cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0221 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "B" Circuit Rang e/ Per- for- manc e	sor 2 Rationality Check	<ul> <li>TPS1 - TPS2 &gt; 6.30%</li> <li>And</li> <li>Actual TPS2 - calc. value &gt; actual TPS1 - calc. value</li> <li>or</li> <li>TPS2 - calc. value &gt; 9.0%</li> </ul>	• Engine speed > 480 RPM	• 0.3 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
P0222 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "B" Circuit Low	Throttle Position Sensor 2 Out Of Range Low	age < 0.20 V		• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
Throt- tle/ Pedal Posi- tion Sen- sort Switc h B" Circuit	sor 2 Out Of Range High	• Signal volt- age > 4.81 V	wayen AG does not guarante		act to to	- Check the Throttle Valve Control Module - GX3 / J338- Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P0261 Cylin- der 1 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors. Checking", page 694.
Cylin- der 1	Short To Battery Plus	• Signal current 2.20 – 4.0 A	Injection valve switched on     Engine speed > 80 RPM	O.5 s Continuous ous  Ous  Ous  Ous  Ous  Ous  Ous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0264 Cylinder 2 Injector "A" Circuit Low	Válves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0265 Cylin- der 2 Injec- tor "A" Circuit High	Injection Valves Short To Battery Plus	• Signal cur- rent 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0267 Cylinder 3 Injector "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	Injection valve switched off  Engine speed 80 RRM  ROTER OF THE PROPERTY OF T	• 0.5 s • Continu- olksv <b>ous</b> n AG do	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0268 Cylin- der 3 Injec- tor "A" Circuit High	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	Check the Fuel Injectors. Refer to F3.6.13 uel Injectors, Checking", page 694.
P0270 Cylin- der 4 Injec- tor "A" Circuit Low	Valves Short To Ground	• Signal volt- page < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to F3.6.13 uel Injectors, Checking", page 694.
P0271 Cylinder 4 Injector "A" Circuit High	Short To Battery	Signal current 2.20 – 4.0 A  Signal volt  Signal volt	Injection valve switched on  Engine speed > 80 RPM	Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to Injectors. Checking", page 694.
P0273 Cylin- der 5 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	<ul> <li>Signal volt- age &lt; 3.0 V</li> </ul>	Injection valve switched off     Engine speed > 80 RPM	0.5 s     Continu <sup>©</sup> ous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.



DTC / Monitor De- scrip- tion Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0274 Cylinder 5 Injection Valves Short To Battery Plus Circuit High	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the Fuel Injectors. Refer to</li> <li>F3.6.13 uel Injectors, Checking", page 694</li> </ul>
P0300 Random/ Multiple Cylinder Misfire Detected  Random/ Multiple Cylinder Misfire Detected  Multiple)	misfire rate (MR) > 2.0%	Active after engine start idle – 150 RPM + 1 camshaft rev  Engine speed range 500 – 6,400 RPM  Engine torque >= 0.0 Nm  IAT > - 48° C  ECT @ start > - 48° C  Fuel cutoff not active  Rough road not detected	• 1,000 rev • Multiple • .volkswagen A	G does not guarantes	- Check for an engine me- chanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression or concern.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage mis- fire rate (MR) > 3.4 – 20.3%		200 rev     Multiple	Immediately	⇒ F3.6.13 uel Injectors, Checking", page 694 .
		(CBTA)  • Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)				- Check the Ignition Coils with Power Output Stage. Refer to     3.6.14 gnition Coils With Power
						Output Stage, Checking", page 696.
Cylin- der 1 Mis- fire	Misfire Crankshaft Speed Fluctuation (Single Or	Emission threshold misfire rate (MR) > 2.0%	Active after engine start idle –     150 RPM + 1 camshaft rev      Engine speed	• 1,000 rev • Multiple	• 2 DCY	Check the intake system visually for leaks (false air).
De- tected	Multiple)		range 500 – 6,400 RPM			Check the spark plugs visually for signs of fouling.
		"thorisedby"	ECT @ start > -     48	AG does not gua <sub>l</sub>	<sup>a</sup> ntee	Check for an engine mechanical fault with a cylinder compression
	ommercial purposes, in part or in whole, is not be	Self and the self	O.0 Nm  IAT > - 48° C  ECT @ start > - 48° C  Fuel cutoff not active  Rough road not detected			the to this concern. Refer to appropriate repair manual for low compression
	7	*totof Guston		20,607	John Maring Report of the Control of	<ul> <li>Check the fuel pressure and delivery quantity. Re- fer to fuel system me-</li> </ul>
		11000	G. Protected by	A nagewayer ka		osis and Testing 11



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
De-scription	Strategy Description  Misfire Crankshaft Speed	teria and Threshold Value  Catalyst damage misfire rate (MR) > 3.4 – 20.3% (CBTA)  Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)	Active after engine start idle –  150 RPM + 1	Length Time  • 200 rev  • Multiple	Immediately      2 DCY      2 DCY      2 DCY      3 DCY      4 DCY      4 DCY      4 DCY      5 DCY      6 DCY      7 DCY	chanical testing in  C3.1 heck", page 14 and/or to appropriate repair manual.  Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.  Check the Ignition Coils with Power Output Stage. Refer to  Mith Power Output Stage. Refer to  Check the Injectors, Checking", page 694.  Check the Injectors, Checking", page 696.  Check the intake system visually for leaks (false air).  Check the spark plugs visually for signs of fouling.  Check for an engine mechanical
			<ul> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not detected</li> </ul>			engine me- chanical fault with a cylinder compression test. Carbon buildup may cause a higher than
						normal com- pression reading and may contrib- ute to this concern. Re- fer to appro- priate repair manual for low com-



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
not <sub>portnik</sub>	d unless	Catalyst damage misfire rate (MR) > 3.4 – 20.3%	7	<ul><li>200 rev</li><li>Multiple</li></ul>	Immediately	pression readings or for carbon buildup re- moval.
ooses, inpart or in whole, is	South Sea authorities and the sea authorities are sea authorities are sea authorities and the sea authorities are sea	Catalyst damage mis- fire rate (MR) > 3.4 – 20.0% (CBUA)		Man Andro State of the State of	respect to the correctnes	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
or commercial pur				in the second	S of informa	C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
7.	64010E			insituologie		Check the     Fuel Injectors. Refer to
	indo indinad	Protected by c	. DA nagswayo V to mgi	kgo *		⇒ F3.6.13 uel Injectors, Checking", page 694
						Check the Ignition Coils with Power Output Stage. Refer to
						I3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696.
Cylin- der 3	Misfire Crankshaft Speed Fluctuation (Single Or	Emission threshold misfire rate (MR) > 2.0%	Active after engine start idle –     150 RPM + 1     camshaft rev	• 1,000 rev • Multiple	• 2 DCY	- Check the intake system visually for leaks (false air).
De- tected	Multiple)		• Engine speed range 500 – 6,400 RPM			Check the spark plugs visually for
			<ul> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> </ul>			signs of foul- ing.
			• ECT @ start > - 48° C			Check for an engine mechanical fault with a
			Fuel cutoff not active			cylinder compression test. Carbon buildup may



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Echologia anthorised		Rough road not swadetected      Augustian of guarant      Augusti	200 rev     Multiple     Soldandidiliming     Soldandidiliming	• Immediately	cause a higher than normal com- pression reading and may contrib- ute to this concern. Re- fer to appro- priate repair manual for low com- pression readings or for carbon buildup re- moval.  - Check the fuel pressure and delivery quantity. Re- fer to fuel system me- chanical testing in  - Check the Fuel Injec- tors. Refer to - pair manual.  - Check the Fuel Injec- tors. Refer to - page 694 - Check the Injectors, Checking", page 694 - Checking", pa
P0304 Cylinder 4 Misfire Detected	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	Emission threshold misfire rate (MR) > 2.0%	Active after engine start idle – 150 RPM + 1 camshaft rev     Engine speed range 500 – 6,400 RPM	• 1,000 rev	• 2 DCY	page 696 .  - Check the intake system visually for leaks (false air).  - Check the spark plugs



		-65.0			19C	
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	
tion	mmercial purposes, in part or in whole, is,		• Engine torque >= 0.0 Nm • IAT > - 48° C • ECT @ start > - 48° C • Fuel cutoff not active • Rough road not detected	Multiple	Immediately	visually for signs of fouling.  Check for an engine mechanical fault with a cylinder compression buildup may cause a higher than
						With Power Output



P0305 Cylin- Crankshaft der 5 Mis- fire De- tected (Single Or Multiple)  P0305 Cylin- Crankshaft Speed Fluctuation (Single Or Multiple)  • Emission threshold misfire rate (MR) > 2.0%  • Active after engine start idle – 150 RPM + 1 camshaft rev • Multiple • Engine speed Grange 500 – 6,400 RPM	25
P0305 Cylin- Crankshaft der 5 Mis- Fluctuation (Single Or De-tected Cted Cted Cted Cted Cted Cted Cted C	Stage, Checking", page 696
in 1AT > -48° C  - ECT @ start > - 48° C  - Fuel cutoff not active - Rough road not detected  - Rough road not detected  - Ct fin a q q fee	Check the ntake system visually for leaks false air).  Check the spark plugs visually for signs of fouling.  Check for an engine mechanical regime mechanical regime mechanical regime of the sylinder compression reading and may contribute to this concern. Refer to appropriate repair manual for ow compression readings or carbon readings or carbon regime of concern. Refer to fuel pressure and delivery quantity. Refer to fuel system mechanical resting in regime of the concern regime



DTC / De- scrip- tion	Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
016, is not posts.	adunto se autrorise d	Catalyst damage misfire rate (MR) > 3.4 – 20.3% (CBTA)  Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)  Counted	kswagen AG does not guaran		6	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
tion/ Dis- tribu- tor En- gine Speed Input Circuit Rang e/	sor Ration- ality Check	teeth vs. reference incorrect  Or  Monitoring reference gap failure	JA NOKEWEYOV VOINE	• 2.0 s • Multiple	2 DCY 2 to the correctness of information	- Check the Engine Speed Sensor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686.  - Check the Camshaft Position Sensor -G40 Refer to  ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.
P0322 Igni- tion/ Dis- tribu- tor En- gine Speed Input Circuit No Signal	RPM Sensor Signal Activity Check	<ul> <li>Camshaft signals &gt; 5.0 [-]</li> <li>And</li> <li>Engine speed no signal</li> </ul>		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sensor -G28 Refer to ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686 Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Knock Control Internal Hardware Check	<ul> <li>Signal fault counter (combustion) &gt; 30.0 [-]</li> <li>Or</li> <li>Signal fault counter (measuring window) &gt; 2.0 [-]</li> </ul>	• Engine speed > 2,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sensor 1-G61 Refer to
Knock / Com- bus- tion Vibra- tion Sen- sor	Knock Sensor Short To Ground Port A  Knock Sensor Short To Ground Port B  Knock Sensor Signal Range Check	• Lower threshold < - 0.70 V  • Lower threshold < 1.4 – 5.6 V	<ul> <li>Engine speed &gt; 1,000 RPM</li> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	• 0.5 s Continuous  • 0.5 s • Multiple	thith respect to the correctness of info	- Check the Knock Sensor 1-G61 Refer to  ⇒ K3.6.16 nock Sensor 1 G61, Checking". page 700.  - Check the Knock Sensor 2-G66 Refer to ⇒ K3.6.17 nock Sensor 2 G66, Checking", page 702.
Knock / Com- bus- tion Vibra- tion Sen- sor 1	Knock Sensor Short To Battery Plus Port A Knock Sensor Short To Battery Plus Port B Knock Sensor Signal Range Check	• Upper threshold > 1.0 V  Co Upper threshold > 23.0 - 92.0 V	<ul> <li>Engine speed &gt; 1,000 RPM</li> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	Ous o	• 2 DCY	- Check the Knock Sensor 1 -G61 Refer to



	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		To Ground Port B	• Lower gen threshold end 0.70 V	• Engine speed > Gaol, 000 RPM  Outline State of According to the state of the stat	1/10	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to
art or in whole, is not be	sor 2 Circuit Low Bank 2	sor Signal Range Check	• Lower threshold < 1.4 – 5.6 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	• Multiple		<u>702</u> .
uate or commercial purposes, in part or in whole, is not be only assent the commercial purposes, in part or in whole, is not be in the commercial purposes.	Knock / Com- bus- tion Vibra- tion	Knock Sensor Short To Battery Plus Port A Knock Sensor Short To Battery Plus Port B	• Upper threshold > 1.0 V	• Engine speed > 1,000 RPM	u- 0.5 Contess of Information,	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to ⇒ K3.6.17 noc k Sensor 2 G66, Check-
O Nogle or Co	Sen- sor 2 Circuit High Bank	Knock Sensor Signal Range Check	• Upper threshold > 23.0 – 92.0 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine loads &gt; 30.0 - 33.8%</li> </ul>	• 50.5 s • Multiple		<u>ing", page</u> <u>702</u> .
	P0341 Cam- shaft Posi- tion Sen- sor "A" Circuit Rang e/ Per- for- manc	Phase Sensor 1 Rationality Check	Signal pat- tern incor- rect	uegewe <sup>MM</sup>	0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.
	e Bank 1 or Single Sen- sor						- Check the Engine Speed Sen- sor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sen- sor G28, Checking", page 686



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0342 Cam- shaft Posi- tion Sen- sor "A" Circuit Low Bank 1 or Single Sen-	Phase Sensor 1 Rationality Check	<ul> <li>Signal voltage permanently low</li> <li>Crankshaft signal 8.0 [-]</li> </ul>		0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.
sor		over it is a state of the state	gby Volkswagen A.G. Volkswa	gen AG does not	auarantee or acceptan.	- Check the Engine Speed Sensor -G28 Refer to  Barbon Speed Sensor G28, Checking", page 686.  - Check the
P0343 Camshaft Position Sensor "A" Circuit High Bank 1 or Single Sen-	sor 1 Rationality Check  Solution 1 Rationality Check	age permanently high Crankshaft signal 8.0 [-]		• Continuous	• 2 DCY	Camshaft Position Sensor - G40 Refer to C3.6.3 am- shaft Posi- tion Sensor G40, Check- ing", page
sor		mammoo to arenii da folikido o ii 1461.X	Profected by cop	Olkewagen AG.	KeWeiMgo italiogs	Check the Engine Speed Sensor -G28 Refer to  3 E3.6.9 ngine Speed Sensor G28, Checking", page 686.
P0351 Ignition Coil "A" Primary Control Circuit/ Open	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to    3.6.14 gnition Coils With Power Output Stage. Checking", page 696 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0352 Ignition Coil "B" Primary Control Circuit/ Open	Ignition Coils Open Circuit Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	• 0.5 s • Continuous	• DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696 .
P0353 Ignition Coil "C" Primary Control Circuit/ Open	Ignition Colls Open Circuit	Signal current -0.25 – -2.0 mA  Or Internal check failed  On  Signal current  And	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P0354 Ignition Coil "D" Primary Control Circuit/ Open	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P0355 Ignition Coil "E" Primary Control Circuit/ Open	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0410 AIR Sys- tem "A"	Air System Check After SAI	Deviation SAI pressure > 50.0 hPa	Mass airflow 7.0     – 120.0 kg/h      Delta engine load -10.0 –     10.0%/rev      ECT 5 – 108° C      IAT 5 – 100° Common			- Check the Secondary Air Injection Sensor 1 - G609 Refer to \$\frac{1}{2}\$\
P0413 AIR Sys- tem Switc hing Valve "A" Circuit Open	Air Valve Open Cir- cuit	• Signal volt- age 9.25 – 11.25 V	<ul> <li>Air valve commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• Continu <sup>2</sup> ous	• 2 DCY 100	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to  ⇒ S3.6.26 econdary Air Injection Solenoid Valve N112. Checking", page 723.
P0414 AIR System Switc hing Valve "A" Circuit Shorted	Air Valve Short To Ground	• Signal volt- age < 6.0 V	<ul> <li>Air valve commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to ⇒ S3.6.26 econdary Air Injection Solenoid Valve N112,



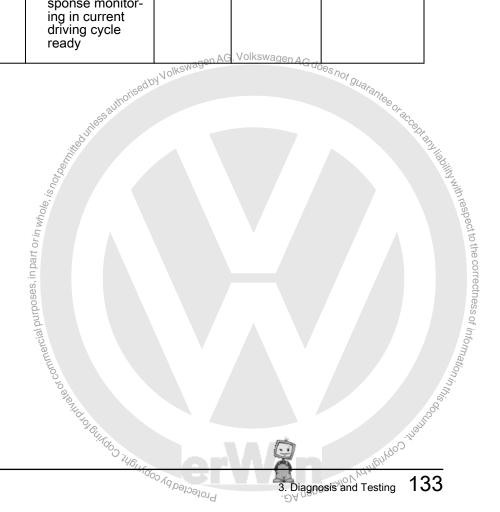
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Criteria and Threshold Value	Secondary Parameters with Enable Gen A Conditions AG do  Air valve commanded on	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Air Valve Short To Battery Plus	5 4.ZU A	Air valve commanded on     Engine speed > 80 RPM	ad antecor	CCBD ANLIGA	Checking", page 723
P0418 AIR Sys- tem Con- trol "A" Circuit	Air Pump Relay Open Circuit	• Signal voltage 4.50 – 5.50 V	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	O.5 s     Continuous  MSYIO A RATUGUMAN	• 2 Puith respect to the correctness of information in this country.	- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0420 Cata- lyst Sys- tem Effi- ciency Below Thres hold Bank 1	System Measure Of OSC Com- pared To OSC Of Borderline Catalyst	Measured OSC / OSC of borderline catalyst measured OSC (HC and NOx- correlated) < 1.0 [-]	Time after engine start > 343.0 s  Or  Time after dew point > 343.0 s  Delta exhaust mass flow < 25.0 kg/h  Exhaust gas mass flow, lower range 25.0 – 130.0 kg/h (CBUA)  Exhaust gasswager range 25.0 – 120.0 kg/h (CBTA)  Exhaust gasswager range 25.0 – 120.0 kg/h (CBTA)  Exhaust gas mass flow, upper range n.a.  Modeled exhaust gas temp. dy-	40.0 s (CBUA)     30.0 s (CBTA)     Once / DCY  AGdoes not gual	• 2 DCY	- Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713 .  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer
	nmercial purposes, in part or in whole, is not	and the state of t	<ul> <li>namic &lt; 50 K</li> <li>Modeled exhaust gas temp. in catalyst system, lower range 500 – 860° C (CBUA)</li> <li>Modeled exhaust</li> </ul>			verter G465, Checking (CBUA)", page 680. - Check the Oxygen Sensor 1
	D 20	SPECIFICATION WAS INDINGON	<ul> <li>Modeled exhaust gas temp. in catalyst system, upper range n.a.</li> <li>Minimum modeled exhaust gas temp. in catalyst system &gt; 400° C</li> <li>For time &gt; 120.0 s</li> <li>Filtered minimum modeled exhaust gas temp. in catalyst system &gt; 450° C</li> <li>Engine load 12.8 – 65.3% (CBUA)</li> <li>Engine load 12.8 – 60.0% (CBTA)</li> </ul>	A nagenzylo Vyo	Light do justing of the state o	O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  - Check the Three Way Catalytic Converter (TWC). Re- fer to T3.6.27 hree Way Catalyt- ic Converter (TWC), Checking", page 725.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
			<ul> <li>Evap purge load- ing not high</li> </ul>			
			• Engine speed 1,200 – 3,320 RPM			
			<ul> <li>Range between lambda set value and lambda val- ue &lt; 0.02 [-]</li> </ul>			
			<ul> <li>Out of lambda range &lt; 2.0 s</li> </ul>			
			Lambda control closed loop			
			Lambda control not at min or max limit			
			Number of checks 3.0 [-]			
			O2S front ready			
			O2S rear ready			
			SAS not active			
			No misfire			
			O2S front re- sponse monitor- ing in current driving cycle ready	. ^G	. Volkswagen 40	



Description  P0441 EVAP System Functional Check Indicated Procedition  Po45 Procedition  P046 Procedition  EVAP System Functional Check Indicated Procedition  Po46 Procedition  P047 Procedition  EVAP System Functional Check Indicated Procedition  Po47 Procedition  P048 Procedition  EVAP System Functional Check Indicated Procedition  P049 Procedition  P049 Procedition  EVAP System Functional Check Indicated Procedition  P040 Procedition  P041 EVAP System Function  Indicated Procedition  P040 Procedition  Immediate Procedition  P070 Procedition  Immediate Procedi	Description   Threshold Value   Length   Time   Length   Length		Ales			Co	
Incorrect Purge Flow    And   Deviation idle control   Engine speed deviation   100 RPM	tem (Incorrect Purge Flow Plow)  • Deviation idle control < 40.0%  • ECT > 60° C  • Or  • Substitute ECT > 80° C  • Altitude < 2,700.0 m  • Lambda control occlosed loop  • Lambda control occlosed loop  • Check the Leak Detection Pump - V144 Refer to 2.36.18 eak Detection Pump - V144 Re	Strategy	teria and Threshold Val- ue	ters with Enable	Length		agnostic Proce-
Pump V144, Checking (3 Pin)", page 704  - Check the Leak Detec-	tion Pump - V144 Refer to  L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page	tem Func- tional Check	Deviation lambda control < 9.0%  And  Deviation idle control <	gine start n.a.  • Engine speed idle  • Engine speed deviation < 100	• Once / DCY		EVAP System for Leaks. Refer to  S2.2.4 ystem Checking For Leaks", page To Check the EVAP Canster Purge Regulator Valve 1 - N80 Refer to  E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688 .  - Check the Leak Detection Pump - V144 Refer to  L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to  E3.6.19 eak Detection Pump V144, Checking (4
			Strategy Description  EVAP System Functional Check	Strategy Description  EVAP System Functional Check  Deviation lambda control < 9.0%  And  Deviation idle control <	Strategy Description  teria and Threshold Value  EVAP System Functional Check  Deviation lambda control < 9.0%  And  Deviation idle control < Engine speed idle  Engine speed deviation < 100	Strategy Description  teria and Threshold Value  EVAP System Functional Check  Deviation lambda control < 9.0%  And  ters with Enable Conditions  Time  Time  Length Time  20.0 s  Engine speed idle  Engine speed deviation < 100  DEVAP System Functional control < 0.000	Strategy Description  teria and Threshold Value  ters with Enable Conditions  tion  Time  tion  20.0 s 20.0 s 20.0 s 20.0 s 20.0 c



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	EVAP System Small Leak Pressure Check	Time for pressure drop < 1.9 s	Time after engine start 12.0 – 1,200.0 s	<ul><li>180.0 s</li><li>Once / DCY</li></ul>	• 2 DCY	<ul> <li>Check the EVAP Sys- tem for Leaks. Refer</li> </ul>
Leak De- tected			• Preceding engine shut-off time > 21,600.0 s			to ⇒ S2.2.4 ys- tem, Check-
(Small Leak)			• ECT 5 – 105° C			<u>ing For</u> Leaks", page
,			• ECT @ start 5 – 105° C			7.
			Air temperature 5     – 95° C			<ul><li>Check the EVAP Can- ister Purge</li></ul>
			Air temperature drop after engine start < 5 K			Regulator Valve 1 - N80 Refer to
			Intake manifold vacuum >     -2,560.0 hPa			⇒ E3.6.10 VAP Canister Purge Regu-
			Altitude < 2,700.0 m     Vehicle speed >= 0 km/h      Vehicle speed ones > 30 km/h      Selected gear	wagen A G		lator Valve 1 N80, Check-
		oʻi	Vehicle speed >=     Vehicle speed >=     Vehicle speed >=	10 40es/	ot guarante	<u>ing", page</u> <u>688</u>
		unlessauthe	<ul> <li>Vehicle speed ones &gt; 30 km/h</li> </ul>		CO <sub>r</sub> acce <sub>by</sub>	<ul><li>Check the Leak Detec- tion Pump -</li></ul>
		Silling Services	Selected gear any drive		, 6	V144 Refer to
		In part or in whole, is not be minimized by the graph part of the	Restart tempera- ture difference > 52 K			Detection Pump V144,
		rt orinw	Evap purge valve closed			Checking (3 Pin)", page 704
		III par	LDP active			- Check the
		rposes,	<ul> <li>Deep down hill driving</li> </ul>			Leak Detec- tion Pump -
		mercial pu	Delta ambient pressure < 7.03 hPa			V144 Refer to by L3.6.19 eak
		mooj	• Or			Detection Dump V1444
		o ale vitali	• Engine load not < 19.5 – 45.0%			Checking (4 Pin)", page
		Of BUIL	• And	ank.	·ingmi	<u>706</u> .
		Copyring to Commercial purposes, in part	• Delta vehicle Loc speed not > -1 km/h	2 Indiagrams	No Vydrityiyqo	L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706

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	1053			, Co		
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
System Purge Control Valve "A" Circuit Open		• Signal voltage > 4.40 – 5.40 V	EVAP purge valve commanded off     Engine speed > 80 RPM	Continuous      Continuous  Acqueontes	• DCY  2 espect to the correctness of information in this or	<ul> <li>Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to</li> <li>E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688 .</li> <li>Check the Leak Detection Pump - V144 Refer to</li> <li>Achecking (3 Pin)", page 704 .</li> <li>Check the Leak Detection Pump - V144, Checking (3 Pin)", page 704 .</li> <li>Check the Leak Detection Pump - V144 Refer to</li> <li>Acheck the Leak Detection Pump - V144 Refer to</li> <li>Check the Leak Detection Pump - V144 Refer to</li> <li>Achecking (4 Pin)", page 706 .</li> </ul>



DTC / De- scrip- tion	Strategy	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
De- scrip- tion	Strategy Description  EVAP System Large Leak Pressure Check	teria and Threshold Value  Time for pressure drop < 0.95 s  .	ters with Enable Conditions  Time after engine start 12.0 – 1,200.0 s  Preceding engine shut-off time > 21,600.0 s  ECT 5 – 105° C  ECT @ start 5 – 105° C  Air temperature 5 – 95° C  Air temperature drop after engine start < 8 K  Intake manifold vacuum > -2,560.0 hPa  Altitude < AG. Volk 2,700.0 m  Vehicle speed ones > 30 km/h  Vehicle speed ones > 30 km/h  Restart temperature difference > 52 K  Evap purge valve closed  LDP active  Deep down hill driving  Delta ambient pressure < 7.03 hPa  Or	• 180.0 s • Once / DCY	• 2 DCY	- Check the EVAP System for Leaks. Refer to ⇒ \$2.2.4 ystem, Checking For Leaks", page 7.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.  - Check the Leak Detection Pump - V144 Refer to ⇒ 13.6.18 eak Detection Pump - V144 Refer to ⇒ 13.6.19 eak Detection P
		TWO PO SERVING OF 3th	<ul> <li>hPa</li> <li>Or</li> <li>Engine load not &lt; 19.5 – 45.0%</li> <li>And</li> <li>Delta vehicle speed not &gt;= -1 km/h</li> </ul>	.ĐA nagawe	MO V VO MO MO PHO PHONE	Detection Pump V1444



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0456 EVAP Sys- tem Leak De- tected (Very Small Leak)	EVAP System Very Small Leak Pressure Check	• Time for pressure drop < 5.8 s	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Air temperature drop after engine start &lt; 3 K</li> <li>Intake manifold vacuum &gt; -2,560.0 hPa</li> <li>Altitude &lt; 2,700.0 m</li> <li>Vehicle speed 0 – 140 od. &gt;= 0 km/h</li> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Restart temperature difference &gt; 52 K</li> <li>Evap purge valve closed</li> <li>LDP active</li> <li>Hill driving</li> <li>Delta ambient pressure -8.0 – 2.0 hPa</li> <li>Or</li> <li>Engine load not &lt; 19.5 – 45.0%</li> <li>And</li> <li>Delta vehicle speed not &gt;= -1 km/h</li> <li>Additional:</li> <li>Vehicle acceleration &lt; 3.80 m/s2</li> <li>Delta engine load &lt; 767.98%/seg</li> </ul>		. Volkswagen AG de	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pump V144,



DTC / Moni De- scrip- tion Moni Strate Descrip	egy teria and	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0458 EVAP EVAP Purge System Purge Control Valve "A" Circuit Low	Signal voltage < 2.15 – 3.25 V 3.25 V Signal our	Secondary Parameters with Enable Conditions  • EVAP purgekswag valve commanded off • Engine speed > 80 RPM	• Continued	• 2 DCY	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688
EVAP Purge Sys- Valve S	rent > 2.2 A	valve comman- ded on	• 0.5 s • Continuous	• 2 DCY	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to   E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0491 AIR Sys- tem Insuf- ficient Flow Bank 1	Air System Flow Check During Catalyst Heating	SAI pressure measured with SAI pressure sensor vs. modeled < 50.0 – 72.0%      Or      Absolute deviation of raw pressure signal from filtered signal: mean value < 1.5 – 9.0 hPa  Advining Sauthorie Sauthori Sauthorie Sauthorie Sauthorie Sauthorie Sauthorie Sauthorie Saut	<ul> <li>120.0 kg/h</li> <li>Delta engine load -10.0 – 10.0%/rev</li> <li>ECT 5 – 108° C</li> <li>IAT 5 – 100° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>SAI pressure sensor ready</li> </ul>	• 45.0 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to   S3.6.25 eco ndary Air Injection Sensor 1 G609, Checking", page 721.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to   S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .
P0501 Vehi- cle Speed Sen- sor "A" Circuit Rang e/ Per- for- manc e	Speed	• Vehicle speed < 6 km/h	2,800 RPM	Multiple	• 2 DCY	vehicle



DTC /	Monitor Strategy	Malfunction Cri- teria and	Secondary Parameters with Enable	Monitoring Length	MIL Illumina- tion	Component Diagnostic Proce-
scrip- tion	Description	Threshold Val- ue	Conditions	Time 2		dure
Multiplication of the control of the	Idle Controller Out Of Range Low	Engine speed deviation < -100 RPM     And     RPM controller torque value >= calculated max value.      ✓ Λοροβορίοια	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> <li>For manual transmission:</li> <li>Engine load &lt; 34.5%</li> </ul>	• 7.0 s • Multiple	2 DCY  ectto the correctness of inform	- Check the Throttle Valve Control Module - GX3 / J338 Refer to    T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
P0507 Idle Con- trol Sys- tem RPM - High- er Than Ex- pec- ted	Idle Con- troller Out Of Range High	<ul> <li>Engine speed deviation &gt; 100 RPM</li> <li>And</li> <li>RPM controller torque value &lt;= calculated min. value</li> <li>Or</li> <li>RPM controller P-portion and I-portion &lt; -20.0 Nm</li> </ul>	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> </ul>	• 7.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitorina	MIL Illumina- tion	Component Diagnostic Procedure
P050 A Cold Start Idle Control System Perfor mance e	Cold Start Monitoring Idle Con- troller Out of Range Low	Engine speed deviation < -100 RPM     And     RPM controller torque value >= calculated max. value      □	ters with Enable Conditions  Time after engine start > 0.0 s  Engine speed idle  Vehicle speed 0 km/h  Altitude < 2,700.0 m  ECT @ start < 143° C  IAT > -48° C  EVAP purge valve closed  External torque request not demanded  Catalyst heating active  For manual transmission: Engine load < 34.5%  Time after engine start > 0.0 s	• 5.0 s • Multiple	2 DCY 2 DCY With respect to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of information in this could be a second to the correctness of the co	- Check the Throttle Valve Control Module - GX3 / J338 Refer to ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
		<ul> <li>Engine speed deviation &gt; 100 RPM</li> <li>RPM controller torque value &lt;= calculated min. value</li> <li>RPM controller P-portion and I-portion &lt; -20.0 Nm</li> </ul>	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT @ start &lt; 143° C</li> <li>IAT &gt; -48° C</li> <li>EVAP purge valve closed</li> <li>External torque request not demanded</li> <li>Catalyst heating active</li> </ul>			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P052 A Cold Start "A" Cam- shaft Posi- tion Tim- ing Over- Ad- vance d Bank 1	Cold Start Monitoring VVT Actua- tor Intake Target Er- ror	Difference between target position vs. actual position > 10° CRK	<ul> <li>Time after engine start &gt;= 10.0 s</li> <li>Engine speed &gt;= 400 RPM</li> <li>Modeled oil temperature &gt;= -48° C</li> <li>Catalyst heating active</li> </ul>	• 5.0 s • Once / DCY	• 2 DCY	- Check engine oil for incorrect viscosity or in need of servicing (dirty oil). Oil that is not clear in color may be causing the sensor to operate incorrectly. The engine oil must be clean and of the correct viscosity in order for the sensor to	
			Time after engine start > 40.000 to a multiple start of the start of	by Volkswagen A	a. Volkswagen AG q	operate properly. Check the vehicle pa- perwork to determine what oil vis- cosity has been used and when the last oil change was performed. Change the engine oil if necessary.	and liability with respect to the correctne
P0606	Oxygen	• Difference	Time after en Logge	• 40.0 s	· 2 DOX	<ul> <li>Check the Camshaft Adjustment Valve 1 - N205 Refer to</li> <li>C3.6.2 amshaft Adjustment Valve 1 N205. Checking". page 672.</li> <li>Replace the</li> </ul>	rectness of information in this of our
ECM/ PCM Pro- ces- sor	Sensors Heater Front Out Of Range	between measured calibration resistance in ECM and set value > 45.0 Ω	s • Engine speed	• 40.0 s • Multiple	. DA nag	Motor Control Module - J623 Refer to appropriate repair manual.	
	Altitude Sensor Plausibility Check	• Signal gradi- ent > 50.0 hPa		<ul><li>20.0 s</li><li>Multiple</li></ul>			

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	Jill.			000		
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Whole:	Journal	• Signal gradi- ent < -50.0 hPa			With respect	
s, inpart or in	Altitude Sensor Short To Ground	• Signal volt- age < 0.20 V		<ul><li>0.2 s</li><li>Multiple</li></ul>	t to the correc	
	Altitude Sensor Short To Battery / Open Cir- cuit	• Signal volt- age > 4.88 V			with respect to the correctness of information in this or	
	ECM: WDA Function	General cause failure		<ul><li>0.5 s</li><li>Continu-</li></ul>	linthis of	
	Monitoring: WDA	Internal check failure		Continu- ous     indured     indured     indured		
	,	Qvervoltage detection failure	Volkswagen AG.	<sup>lam</sup> oir		
	ECM: EE- PROM Check	Check failed				
	ECM: Self Check For Sensor IC internal Hardware Check (Electrical Adjustment Communi- cation, Volt- age Sup- ply)	• Check				
	ECM: 5V Supply Voltage In- ternal Hard- ware Check	Under-/ overvoltage detection				
	ECM: A/D Converter Power-Up Calibration	Check failed	Initialization phase active			
	ECM: A/D Converter		Initialization phase active			
	Adc-Cannel Conversion		Power-up cali- bration executed			
	ECM: EGAS Module Function Monitoring: A/D Con- verter	Comparison reference voltage with sensor volt- age incorrect				



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		<ul><li>Test voltage check failed</li><li>Internal check failed</li></ul>				
	ECM: EGAS Module Function Monitoring: Torque	Comparison with allowed engine tor- que incorrect	Internal engine speed > 600 RPM			
	ECM: EGAS Module Function Monitoring: Engine Speed De- viation	Difference between cal- culated and internal en- gine speed > 320 RPM	Internal engine speed > 520 RPM			
	ECM: EGAS Module Function Monitoring: Coding	Internal check failed				
	ECM: EGAS Module Function Monitoring: Ignition Timing	brised by Volkswagen Ar	a. Volkswagen AG does not g	uarantee or acc		
. o/	Intern	System re- action incor- rect		\$\frac{2}{2}\tau_1	, liability with res	
arcial purposes, in part or in wh	ECM: EGAS Module Function Monitoring: Injection Rate Limi- tation				with respect to the correctness of information in this or	
Anarojalp	ECM: EGAS Module Eunction Monitoring: Accelerator Position	Internal check failed		juge	f information in this o	
	* Eljírdo ,	Protected by copyright	Volkswagen AG.	Volnight God Jagar		



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	ECM: EGAS Module Monitoring Module	Function controller check failed     And     Monitoring module check no failure	SPI - interface no failure			
	CAN: Internal Fault CAN Controller RAM Check	RAM error memory checksum error	Initialization phase     Time after ignition on 500.0 ms	• 0.0 ms • Once / DCY		
uel ump 'A"		5.50 V	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Deliv- ery Unit - GX1- / Fuel
Con- trol Cir- cuit/ Open	Fuel Pump Relay Short To Ground	• Signal volt- age < 3.0 V	CO TAI IVI			Pump Relay -J17 Refer to ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Check- ing", page 690
P0629 Fuel Pump "A" Con- trol Circuit High	To Battery Plus	Ι 120Δ	Pump relay commanded on     Engine speed > 80 RPM  RPM  A COMMAND OF THE PROPERTY OF THE	• 0.5 s • Continuation ous		GX1- / Fuel Pump Relay
			Engine speed > 80 RPM  The special purposes, in part or in pa			-J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Check- ing", page 690 .
46	Rep. Gr.ST - Ge	eneric Scan Tool	40 <u>[1</u>	Protected by copy	.ĐAn	OBEWSHIO VICTURE



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0638 Throt- tle Ac-	Throttle Actuator Basic Settings Rationality Check Close Movement		<ul> <li>Engine speed 0 RPM</li> <li>Vehicle speed 0 km/h</li> <li>ECT &gt; -20° C</li> <li>IAT &gt; -20° C</li> <li>Case 1:</li> <li>Ignition on</li> <li>Case 2:</li> <li>Engine shut-off-time 3.0 s</li> <li>Number of checks 2.0 [-]</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
is not pool nite.	Throttle Actuator Basic Settings Signal Range Check @ Mechanical Stop Low	voltage not (0.40 – 0.80) V  Or TPS 2 signal voltage not (4.20 – 4.60)	<ul> <li>Engine speed 0 RPM</li> <li>Vehicle speed 0 km/h</li> <li>Case 1:</li> <li>Ignition on</li> <li>ECT -20 - 115°</li> <li>Vage CAG dogs 1-143° C</li> <li>IAT -20 - 143° C</li> </ul>	0.3 s     Multiple  Oraccantallibridge  O		
Sen- sor Refer- ence Volt- age "A" Cir- cuit/	sor Refer- ence Circuit	age deviation > +/- 0.3	. DA nagewaylo V Valnging	• 0.5 s • Continuous	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sen- sor Refer- ence Volt- age "B" Cir- cuit/ Open	sor Refer- ence Circuit B Signal Range Check	V	dika una sauto isada by Volk	0.5 s     Continuous  Swagen AG. Volk	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.
Sen- sor	ECM: Sensor Reference Circuit C Signal Range Check	> in part or in whole,	SQ 100	• U.5 s • Continuous	· 2 DCY	sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair
			AND MONOOVAD	Protecte	Лкемедеп А.С.	Mando italing



DTC Description	Strategy	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
1, Oxy- gen Sen- sor Cor- rec- tion Cen- ter Sen- sor Con- trol Limit Reach ed	tem Out Of Range	I - portion of 3rd lambda control loop > 0.03 [-]  agen AG. Volkswagen,	<ul> <li>Engine speed         1,400 – 3,600         RPM</li> <li>Modeled exhaust         gas temp 350 –         1,000° C</li> <li>Engine load 20.3         – 54.8%</li> <li>Lambda control         closed loop</li> <li>2nd lambda control closed loop</li> <li>3rd lambda control closed loop</li> <li>O2S rear ready</li> <li>Electrical check ready</li> <li>O2S heater rear ready no fault</li> </ul>	<ul> <li>1,800.0 s</li> <li>Multiple</li> </ul>	• 2 DCY	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Center Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
P150 A Engine Off	Engine-Off- Time Com- parison Of Engine Off Time From Instrument Cluster Control Unit	Difference	Key on after ECM after run time active     CAN active	spect to the correctness of \$6.0	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - If ignition off B+ is lost to ECM, this code will set. Check power and ground inputs to ECM first. Refer to Wiring Diagrams for pin locations. If all power/grounds to ECM are



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion n AG. Volkswagen A	Component Diagnostic Procedure
		Difference between en- gine-off-time and ECM af- ter-run time > 12.0 s	• CAN active	ectby Volkswage		present, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.
P2088 "A" Cam- shaft Posi- tion Actua- tor Con- trol Circuit Low Bank 1	VVT Actua- tor Intake Short To Ground	• Signal volt- age < 2.15 – 3.25 V	Camshaft valve off     Engine speed > 80 RPM      Redui 'sassodund leighaumo to alegand	• 0.5 s • Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to
			THE THE WAY THE	M <sub>doo</sub> Nqpopopopopopopopopopopopopopopopopopopo	a .5A	Adjustment Valve 1 - N205 Refer to  C3.6.2 am- ment Valve 1 N205, Checking", page 672.
shaft Position Actuator Control Circuit High Bank	tor Intake Short To Battery Plus	Signal current > 2.2 A	<ul> <li>Camshaft valve on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to
1						- Check the Camshaft Adjustment Valve 1 - N205 Refer to



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2096 Post Cata- lyst Fuel Trim Sys- tem Too Lean Bank	Fuel System Out Of Range	• I-portion of 2nd lambda control loop < -0.040 [-] (CBTA) • I-portion of 2nd lambda control loop < -0.030 [-] (CBUA)	Modeled exhaust gas temp. 400 – 1,000° C     Exhaust gas mass flow 18.0 – 180.0 kg/h     Lambda control closed loop     Lambda control not at min or max limit     2nd lambda control closed loop     O2S front ready     O2S rear ready     O2S heater front active     O2S heater front active     Fuel cut off not active     Catalyst heating not active     SAI not active	• Multiple	oility with respect to the correctnes	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
		Protecten	.DA naganzyı			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Post Cata- lyst Fuel Trim	Fuel System Out Of Range	I-portion of 2nd lambda control loop > 0.040 [-] (CBTA) (	Modeled exhaust gas temp. 400 – 1,000° C     Land texhaust gas mass flow 18.0 – 180.0 kg/h      Lambda control closed loop     Lambda control not at min or max limit     2nd lambda control closed loop     O2S front ready     O2S rear ready     O2S heater front active     Catalyst heating not active     SAI not active	• Multiple	• 2 DCY	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for S
						Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.
	Throttle Actuator Rationality Check	Deviation throttle value angles vs calculated value > 4.0 – 50.0%		<ul><li>0.5 s</li><li>Multiple</li></ul>	• 2 DCY	<ul> <li>Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to</li> </ul>
Motor Circuit Rang e/ Per- for- manc e		<ul> <li>Duty cycle &gt; 80.0%</li> <li>And</li> <li>ECM power stage no failure</li> </ul>		<ul><li>5.0 s</li><li>Multiple</li></ul>		T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Throt- tle Ac- tuator Con- trol Sys- tem - Force d	Throttle Actuator Open Circuit  Throttle Ac-	check	<ul> <li>Duty cycle &gt; 80.0%</li> <li>Or</li> <li>Deviation throttle value angle vs. calculated value &gt; 4.0 - 50.0%</li> </ul>	• 12.0 s • Multiple	2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Mod-
Limi- ted Power	tuator Functional Check Throttle Ac- tuator Tem- perature / Current	check failed		<sub>orien</sub> AG. Volksw	agen A.G. d	ule GX3 / J338, Checking", page 726 .
	Monitoring Throttle Actuator Short To Battery Plus / Short To Ground	check	ijied unless authorised by Volksv	29	S does not go	larantee or acceptally
	Accelerator Position Sensor 1 Out Of Range Low	• Signal volt- age < 0.6 V		• 0.5 s • Continuous	• 2 DCY	- Check the Accelerator Pedal Module GX2. Checking", page 670.
	Accelerator Position Sensor 1 Out Of Range High	• Signal volt- age > 4.8 V		• 0.5 s • Continuous	NOINS.	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670
	Accelerator Position Sensor 2 Out Of Range Low	Signal volt- age < 0.3 V	4,0 <b>9</b> <sub>1</sub> 0	¥⊿0.5 s • Continu- ous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.



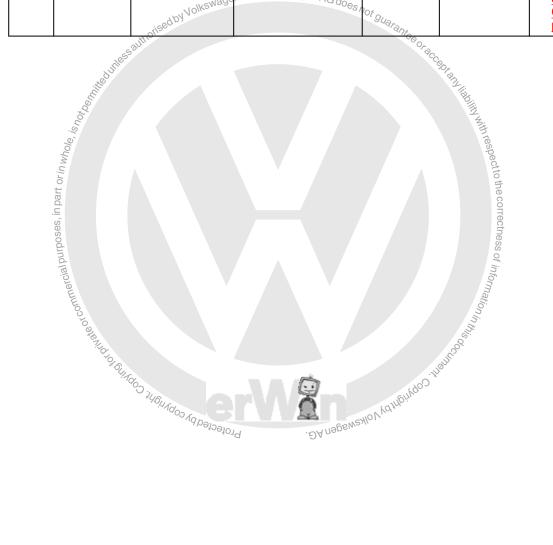
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Throt- tle/	Accelerator Position Sensor 2 Out Of Range High	• Signal volt- age > 2.4 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.
Throt- tle/ Pedal	Accelerator Position Sensor 1 And 2 Ra- tionality Check	age sensor 1 vs. 2 > 0.167	mV <sup>e</sup>	• 0.5 s • Continuous	Goog DCY	- Check the Accelerator Pedal Module -GX2 Refer to  A3.6.1 ccelerator Pedal Module GX2, Checking", page 670 .
		horpwage of commercial purposes, in particular purpose	Signal voltage sensor 2 > 445.0 mV	.ə.A.	перемежно V чанвіну	erater Pedal Module GX2, Checking", page 670.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2177 Sys- tem Too	Fuel Sys- tem Too Lean @ Part Load	Adaptive val- ue > 28.0%	gine start n.a.  • Engine speed	• 25.0 s • Multiple	• 2 DCY	Check the vacuum lines visually for leaks.
Lean Off Idle Bank 1			1,320 – 4,600 RPM • Engine load 25.0 – 46.0%			- Check the intake system visually for leaks
		an AG. VO	• Mass air flow 45.0 – 300.0 kg/h			(false air).
	, horised	py Volkswagen New	• ECT > 59° C • Or	YO <sub>O</sub>		fuel pressure and delivery quantity. Re-
	agd Inless auth		<ul> <li>Substitute ECT n.a.</li> <li>IAT &lt; 85° C</li> </ul>	or acceptally		fer to fuel system me- chanical testing in
whole, is not be			Ratio manifold pressure to ambient pressure > 0.20 [-]		threspect	C3.1 heck", page 14 and/or to appropriate repair manual.
, inpart or i			Valve overlap < 40° CRK		to the corre	- Check the Fuel Injectors. Refer to
al purposes			<ul><li>Lambda control closed loop</li><li>Evap purge valve</li></ul>		ctness of in	<u>⇒</u> F3.6.13 uel Injectors,
commerci			closed     If low fuel signal     then wait until		formation	Checking", page 694 .
109%	The Theory	Ser\/	Mass air flow 45.0 – 300.0 kg/h  KSWAGGET S 59° C  TOR  Substitute ECT n.a.  IAT < 85° C  Ratio manifold pressure to ambient pressure > 0.20 [-]  Or  Valve overlap < 40° CRK  Lambda control closed loop  Evap purge valve closed  If low fuel signal then wait until fuel consumption n.a.	ingo, ingilidada		Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to
		Protected by	. Nolkewagen AG.			⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
						- Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer to  ⇒
						F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						<u>J17, Check-ing", page</u> 690 .
						<ul> <li>Check the Intake Mani- fold Sensor - GX9 Refer to</li> </ul>
		ised by Volkswage	n AG. Volkswagen AG do <sub>es i</sub>	Pot guarans		⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698.





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sys- tem Too Rich Off Idle	Fuel Sys- tem Too Rich @ Part Load	• Adaptive value < -28.0%	gine start n.a.  • Engine speed 1,320 – 4,600 RPM  • Engine load 25.0	• 25.0 s • Multiple	• 2 DCY	Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
1			<ul> <li>46.0%</li> <li>Mass air flow 45.0 – 300.0 kg/h</li> <li>ECT &gt; 59° C</li> <li>Or</li> </ul>			C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
		sauthorised by Volk	Substitute ECT n.a. n.a. Volkswagen AG AT < 85° C  Ratio manifold pressure to am-	does not guarant	800-3	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking",
	hole, is payosimily	dunas	<ul> <li>bient pressure &gt; 0.20 [-]</li> <li>Or</li> <li>Valve overlap &lt; 40° CRK</li> <li>Lambda control</li> </ul>		CCED TO THE TO SEE THE	page 694.  - Check the Oxygen Sensor 1 Before Catalytic Con-
	rcial purposes, in part or in w		closed loop  • Evap purge valve closed		octio income on mos of Info	verter - GX10 Refer to  COMMON TO SERVICE STATE STAT
	ommo to asservi	A TO TO THOMADO	- 46.0%  • Mass air flow 45.0 – 300.0 kg/h  • ECT > 59° C  • Or  • Substitute ECT n.a. Volkswagen AG. Volkswage	Vangi	is soft Information in this obout the state of the state	Checking", page 716.  - Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer
		Sol <sub>qp</sub>	Protecte	geweylo V.		F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Check- ing", page 690
						- Check the Intake Manifold Sensor - GX9 Refer to   3.6.15 ntake



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		74.	orised by Volkswagen AG. Vol	kswagen AG doe	anot guarantee	Manifold Sensor GX9, Checking", page 698.
		rposes, in part or in whole, is not beaming the serious seriou	Secondary Parameters with Enable Conditions  Thomas and the conditions of the condit		S & COR	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688
		oommercial puring to or commercial pu	Protected by Copyright	. DA negsw	Sur Cobyldurph Norks	688 s.s.pf information in this occur.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL-Illumina- tion	Component Diagnostic Procedure
P2181 Cool- ing Sys- tem Per- for-	Coolant System Perform- ance Cool- ing System Perform- ance Not In A Expect Range	Thers 03: Cooling system temperature to low after a sufficient air mass flow integral 75° C  Thers 03: Thers 04: Thers 04: Thers 05: Th	<ul> <li>Thres_01:</li> <li>Begin of air mass integration when engine temp. 30° C</li> <li>Thers_02:</li> <li>ECT @ start -10 - 60° C</li> <li>AAT &gt; -10° C</li> <li>Fuel cut off not active</li> <li>And</li> <li>Engine load 14.0 - 95.0%</li> <li>Air mass_01:</li> <li>Integrated air mass depending on engine temp. at start and AAT 4.0 - 13.5 kg/h (CBTA)</li> <li>Integrated air mass depending on engine temp. at start and AAT 4.0 - 13.47 kg/h (CBUA)</li> <li>Depending on temp. at engine start and min. observed AAT for longer than 120.0 - 180.0 s</li> <li>Depending on temp. at engine start and min. observed AAT for longer than 120.0 - 180.0 s</li> <li>Depending on temp. at engine start and min. observed AAT for more than 4.0 - 12.0 kg</li> <li>At time of fault decision:</li> <li>Average air mass flow 35.0 - 280.0 kg/h</li> <li>Average vehicle speed 30 - 120 km/h</li> </ul>	DCY	• 2 DCY	Check the Engine Coolant Temperature Sensor G62 Refer to E3.6.7 ngine Coolant Temperature Sensor G62. Checking". page 683.  Check the Engine Coolant Temperature Sensor G7. Check the Engine Coolant Temperature Sensor On Radiator Outlet -G83



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2184 Engine Coolant Temperature Sensor 2 Circuit Low	Fan Control Coolant Tempera- ture Sensor Short To Ground	140° C	a dilited under sauthorized by Volk	2.0 s     Continuous	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking*
P2185 Engine Coolant Temperature Sensor 2 Circuit High	Fan Control Coolant Tempera- ture Sensor Short To Battery / Open Cir- cuit	-40 0 C C C C C C C C C C C C C C C C C C		• Continuous		Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking",
			Book Weinedoo Meinedoo Vab	Protecte	JA Nagen AG.	page 685.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sys- tem Too	Fuel Sys- tem Too Lean @ Idle	Adaptive val- ue > 5.02%	Time after engine start n.a.  Engine speed < 860 RPM	<ul><li>40.0 s</li><li>Multiple</li></ul>	• 2 DCY	Check the vacuum lines visually for leaks.
Lean at Idle Bank 1			<ul> <li>Mass air flow &lt; 35.0 kg/h</li> <li>ECT &gt; 59° C</li> </ul>			Check the intake system visually for leaks (false air).
			<ul> <li>Or</li> <li>Substitute ECT n.a.</li> <li>IAT &lt; 85° C</li> <li>Ratio manifold pressure to ambient pressure &gt;</li> </ul>			- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
			<ul> <li>0.20 [-]</li> <li>Or</li> <li>Valve overlap &lt; 40° CRK</li> <li>Delta part load</li> </ul>			C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
			<ul> <li>adaptation ready</li> <li>Lambda control closed loop</li> </ul>			- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors,
		Solitile driles sauthorised by	Lambda control closed loop     Evap purge valve closed Nolkswage     The low fuel signal then wait until fuel consumption n.a.	n AG does not gue	Fantee or accept and lighting	Checking", page 694.  - Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re-
	purposes, in part or in whole, is					fer to  O3.6.23 xy- gen Sensor I Before Catalytic Converter GX10, Checking", page 716.
	Commercial	to one much of Gi			AND THE THE STATE OF THE STATE	Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to
		Sole TITO OF BURGOS THE WAS THE	Protected by	DA N968W2AIOV KO	Meliyago in	₹3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	hole, is not				Nwith respe	J17, Check- ing", page 690
	sommercial purposes, in part or in whole, is hog				liability with respect to the correctness of information in this confunction in this confunction in the conf	- Check the Intake Manifold Sensor - GX9 Refer to   3.6.15 ntake
	ommercial pur				s of informatio	Manifold Sensor GX9, Checking", page 698
	10 Stewart Of	Rundo Habirdoo Vabeloe			ing the state of t	
		COD HOUNDON COPING	3A nega	Weshlo V Volksing of		



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2188 System Too Rich at Idle Bank 1	Fuel System Too Rich @ Idle	ial purposes, in part or in whole	gine start n.a.  Engine speed < 860 RPM  Mass air flow < 35.0 kg/h  ECT > 59° C  Or  Substitute ECT n.a.  IAT < 85° C  Ratio manifold pressure to ambient pressure > 0.20 [-]  Or  Valve overlap < 40° CRK  Delta part load adaptation ready  Lambda control closed loop  Evap purge valve closed  If low fuel signal then wait until fuel consumption in.a.			O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  - Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Check- ing", page 690.  - Check the Intake Mani- fold Sensor -



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						Manifold Sensor GX9, Checking", page 698
						- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.





DTC / De- scrip- tion	Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable of Conditions	Monitoring Watength Time	MIL Illumination	Component Diagnostic Procedure
P2195 O2 Sen- sor Signal Biase d/ Stuck Lean Bank 1 Sen- sor 1		Delta lamby da of 2nd lambda control loop > 0.065 [-] (CBTA)     Delta lambda control loop > 0.070 [-] (CBUA)	<ul> <li>Modeled exhaust gas temp 400 – 1,000° C</li> <li>Delta engine load &lt; 12.0%</li> <li>Exhaust gas mass flow 18.0 – 180.0 kg/h</li> <li>Lambda control closed loop</li> <li>2nd lambda control closed loop</li> <li>O2S front ready</li> <li>O2S rear ready</li> <li>O2S heater front ready</li> <li>O2S heater front ready</li> <li>Fuel cut off not active</li> <li>Catalyst heating not active</li> <li>SAI not active</li> <li>Case 1:</li> <li>1st lambda control loop not at min or max limit</li> <li>2nd lambda control loop active</li> <li>Case 2:</li> <li>1st lambda control loop at min limit</li> <li>O2S front &lt; 1.0 [-]</li> <li>O2S rear voltage &lt; 0.4 V</li> <li>Case 3:</li> <li>1st lambda control loop at max limit</li> <li>O2S front &gt; 1.0 [-]</li> <li>O2S rear voltage &gt; 0.6 V</li> </ul>	<ul><li>100.0 s</li><li>Multiple</li></ul>	• 2 DČY	Before Catalytic Converter - GX10 Refer to  3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  - Check the Fuel Delivery Unit -



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
tion	Oxygen Sensors Front Out Of Range	• Delta lambda of 2nd lambda control loop < -0.065 [-] (CBTA) • Delta lambda control loop < -0.070 [-] (CBUA)	Modeled exhaust gas temp 400 – 1,000° C     Delta engine load < 12.0%     Exhaust gas mass flow 18.0 – 180.0 kg/h     Lambda control closed loop     2nd lambda control closed loop     O2S front ready     O2S rear ready     O2S heater front ready     O2S heater front ready     Catalyst heating not active     Catalyst heating not active     SAI not active     Case 1:     1st lambda control loop not at min or max limit     2nd lambda control loop active     Case 2:     1st lambda control loop at min limit     O2S front < 1.0 [-]     O2S rear voltage	• 100.0 s • Multiple	* 2 DCY  *agen AG does not go	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  303.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  Check the Fuel Delivery Unit - GX1 Fuel Pump Relay -J17 Refer to  31.6.11 uel Delivery Unit GX1 / Fuel Pump Relay -J17, Check- ing", page 690.  - Check the Intake Manifold Sensor - GX9 Refer to  31.6.15 ntake Manifold Sensor GX9. Checking",



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2237 O2 Sensor Positive Current Control Circuit/ Open Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Pump Cur- rent (IP)	O2S signal front < 1.70 V And Fuel cutoff > 3.0 s signal front 1.49 - 1.51 V And Delta lamboda controller > 0.10 [-]	<ul> <li>O2S ceramic temp &gt; 720° C</li> <li>Electrical adjustment not active</li> <li>Heater control closed loop</li> <li>Evap purge valve ready</li> <li>O2S ceramic temp &gt; 720° C</li> <li>Lambda modulation &gt; 0.02 [-]</li> <li>Lambda control closed loop</li> <li>Heater control closed loop</li> </ul>	<ul><li>5.0 s</li><li>Multiple</li><li>6.5 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  303.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10. Checking page 716.
P2243 O2 Sensor Reference Voltage Circuit/ Open Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Nernst Volt- age (UN)	<ul> <li>O2S signal front &gt; 4.70 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> <li>O2S signal front &lt; 0.20 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> </ul>	• Heater control active	• 25.5 s Multiple	2 DCY DA NOBENEZIO V VOIT	Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  3 O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P2251 O2 Sensor Negative Current Control Circuit/ Open Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Vir- tual Mass (VM)	<ul> <li>O2S signal front 1.47 – 1.53 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> </ul>	<ul> <li>Modeled exhaust gas temp &lt; 750 Ω</li> <li>No fuel cutoff &gt; 2.0 s</li> <li>Heater control active</li> </ul>	• 30.5 s	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2257 AIR System Control "A" Circuit Low	Relay Short To Ground	• Signal voltage < 3.0 V	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking",
P2258 AIR System Control "A" Circuit High	Air Pump Relay Short To Battery Plus	Signal current 0.60 – 1.20 A	Pump relay commanded on     Engine speed > 80 RPM  Authorized by Volkswag  authorized by Volkswag	O.5 s Continuous  AG. Volkswag	• 2 DCY	page 719.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101.  Checking", page 719.
O2 Sen- sor Signal Biase d/ Stuck	Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 30.0% En- richment) (CBTA)	O2S signal rear not oscillating at references.	Mass air flow 22.0 – 120.0 kg/h (CBTA)  Modeled exhaust gas temp > 350° C  O2S rear readiness > 30.0 s (CBTA)  2nd lambda control closed loop	• 210.0 s (CBTA)	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter GX7. Refer to D3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Checking", page 713.
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DTC / Monitor De- scrip- tion Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 20.0 - 30.0% Closed Loop Enrichment) (CBUA)		2nd lambda control closed loop			- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to Sensor for Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680	
P2271 Oxygen O2 Sensors Sensor Point - LSF Signal Biase (If Sensor Stuck Rich: Stuck Rich: Rich Bank 1 Sensor Successful: Sor 2 Waiting For Next Fuel Cut Off (CBTA)	(CBTA)  O2S signal rear not oscillating at reference > 600.0 mV	(CBTA)  • Mass air flow 22.0 – 120.0 kg/h (CBTA)  • Modeled exhaust gas temp > 350° C  • O2S rear readiness > 30.0 s (CBTA)  • Fuel cut off > 3.0 s 2nd lambda control closed loop	• 210.0 s (CBTA) • Multiple	• 2 DCY	Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to   30.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.	pect to the correctness of information in this odo,

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
	Oxygen Sensors Rear (Bina- ry Check Of Response Time At Fuel Cut Off (CBTA)	<ul> <li>(CBTA)</li> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt; 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 7,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2-Sensor lambda signal &gt; 4.0 [-]</li> </ul>	• 6.0 s (CBTA) • Multiple	-DA negewe	No V Walter Was Direction of the Walter Bridge of t	William III
	Oxygen Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% - 15.0% Closed Loop En- leanment) If Enlean- ment Is Not Successful: Waiting For Next Fuel Cut Off (CBUA)	(CBUA) • O2S signal rear not oscillating at reference > 600.0 mV	<ul> <li>(CBUA)</li> <li>Mass air flow 30.0 – 120.0 kg/h (CBUA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 10.0 s (CBUA)</li> <li>Fuel cut off &gt; 3.0 s</li> <li>2nd lambda control closed loop</li> </ul>	• 80.0 s (CBUA) • Multiple		- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.	

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		<ul> <li>(CBUA)</li> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 4,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	valve diagnosis ready  • O2S front ready  • Fuel cut off active  • Front O2 - sensor lambda signal > 4.0 [-]	• 4.5 s (CBUA) • Multiple	Ot Quarantee Oraccepta	A liability with respect to the correctness of information
P2274 O2 Sen- sor Signal Biase d/ Stuck Lean Bank 1 Sen- sor 3	Sensors Rear 2 - Point - LSF	O2S signal rear not oscillating at reference < 600.0 mV	<ul> <li>Mass air flow 22.0 – 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s</li> <li>2nd lambda control closed loop</li> </ul>	• 210.0 s • Multiple	• 2 DCY	Center Oxy-



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Biase d/ Stuck Rich	Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% En- leanment) If Enlean- ment Is Not Successful:	O2S signal rear not os- cillating at reference > 600.0 mV	<ul> <li>Mass air flow 22.0 – 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s</li> <li>Fuel cut off active</li> <li>2nd lambda control closed loop</li> </ul>	<ul><li>210.0 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking
ot commercial purposes, in part or in whole, is not beyon.	Oxygen Sensors Rear (Bina- ry LSF) Check Of Response Time At Fuel Cut Off	<ul> <li>Response time at fuel vocut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 7,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>Rich voltage (enkswable) &gt;= 548.0V</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>	• 4.5 s • Multiple  **Ceool acceptation to the state of t	th respect to the correctness of inf	(CBUA)", page 680 .



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is not bernite	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
orivate or commercial purposes, in part or in whole, is,	P2279 MAP/ MAF - Throt- tle Po- sition Corre- lation	Monitor Strategy Description  Leak to Intake Manifold Adaptation Value Monitoring	• Offset value throttle mass flow > 13.0 kg/h	Desired mass flow 0.0 – 25.0 kg/h  EVAP purge valve closed  EGR off  BERNEYIO NAME AND THE PROPERTY OF THE PURPLE	• 10.0 s	• 2 DCY	Check for air leaks near the throttle body, oil fill cap not tight or oil dipstick not seated in tube. Also check for any engine gaskets that can cause additional air to enter the crankcase can set this fault as the PCV system is not metered. If a vacuum leak or crankcase seal is the cause, the idle may be rough or unstable.  Check the Intake Manifold Sensor - GX9 Refer to  3.6.15 ntake Manifold Sensor GX9. Checking", page 698.  Check the Throttle Valve Control Module - GX3 / J338 Refer to  3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.  Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  3.6.10 VAP Canister  Canister
	<u> </u>						Purge Regu-



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						lator Valve 1 N80, Check- ing", page 688
P2300 Ignition Coil "A" Primary Control Circuit Low	Ignition Coils Short To Ground	Signal current > 24.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous  Volkswagen AG	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P2301 Igni- tion Coil "A" Pri- mary Con- trol Circuit High	Ignition Coils Short To Battery Plus	Signal voltage > 5.1 - 7.9 mA  source of the state of th	• Engine speed > 680 RPM	0.5 s     Continuous	2 2 0 0 1	- Check the Ignition Coils with Power Output Stage. Refer to  3.6.14 gnition Coils With Power Output Stage. Checking", page 696
P2303 Igni- tion Coil "B" Pri- mary Con- trol Circuit Low	Ignition Coils Short To Ground	Signat current > 24.0 mA	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
P2304 Ignition Coil "B" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to



DTC/	Monitor	Malfunction Cri-	Socondan/ Parama	Monitoring	MIL Illumina-	Component Di-
De- scrip- tion	Strategy Description	teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Length Time	tion	agnostic Proce- dure
P2306 Ignition Coil "C" Primary Control Circuit Low	Ignition Coils Short To Ground  Ignition	• Signal cur- rent > 24.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DC	- Check the Ignition Coils with Power Output Stage. Refer to   ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
Igni- tion Coil "C" Pri- mary Con- trol Circuit High	Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	Continu- ous     No Mayurindo	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P2309 Ignition Coil "D" Primary Control Circuit Low	Čoils Short To Ground	Signal cur- rent > 24.0 mA	• Engine speed > 680 RPM	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking". page 696 .
P2310 Ignition Coil "D" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking". page 696.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2312 Ignition Coil "E" Primary Control Circuit Low	Ignition Coils Short To Ground	Signal current > 24.0 mA  MA  MA  MA  MA  MA  MA  MA  MA  MA	• Engine speed > 680 RPM	0.5 s     Continuous	•t <sub>9</sub> J <sub>arante</sub> <sub>oracepra</sub>	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ 3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P2313 Ignition Coil "E" Primary Control Circuit High	Ignition	Signal voltage > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	·jugui	- Check the Ignition Coils with Power Output Stage. Refer to Stage. Refer to Coils With Power Output Stage. Checking", page 696.
P2400 EVAP Sys- tem Leak De- tec- tion Pump Con- trol Cir- cuit/ Open	LDP Open Circuit	• Signal volt- age > 4.40 – 5.60 V	LDP commanded off  Engine speed > 80 RPM	• 0.5 s • Continue ous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2401 EVAP Sys- tem Leak De- tion Pump Con- trol Circuit Low	LDP Short To Ground	• Signal volt- age < 2.15 – 3.25 V	<ul> <li>LDP commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
	LDP Short To Battery Plus	Signal current > 3.0 A  Mercial purposes, in part or in whole, is not be mined in the second in	LDP commanded on     Engine speed > n / 80 RPM of the sea of		• 2 DCY  AG does not guarante	- Check the Leak Detection Pump - V144 Refer to  L3.6.18 eak Detection Pump V144, Checking (3 Pin) page 704 .  - Check the Leak Detection Pump - V144 Refer to  L3.6.19 eak Detection Pump V144, Checking (4 Pin) page
		EOO PO DE PROPERTO DE LA COMPANSIONA DEL COMPANSIONA DE LA COMPANS	Protected by copyright, Copyrig	AG.	Magewaylov Volhein	706 . Om



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P2403 EVAP System Leak Detection Pump Sense Circuit/ Open	Reed Sensor Rationality Check Unable To Close	• Low signal voltage > 0.5 s	gine shut-off time > 21,600.0 s  ECT 5 - 105° C  ECT @ start 5 - 105° C  Altitude < 2,700.0 m  Integrated purge flow > 29.90 g  Restart temperature difference > 52 K  Vehicle speed >= 0 km/h  Vehicle speed ones > 30 km/h  Selected gear any drive  Evap purge valve	• 0.5 s • Once / DC Y gen/		- Check the Leak Detection Pump - V1,44 Refer to Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump - V144 Refer to Detection Pump - V144 Refer to Detection Pump V144, Checking (4 Pin)", page 706.	and the state of t
P2404 EVAP System Leak Detection Pump Sense Circuit Rang e/ Perfor- manc e	Reed Sensor Rationality Check Unable To Open	<ul> <li>High signal voltage &gt; 12.0 s</li> <li>And</li> <li>Number of checks 30.0 [-]</li> </ul>	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>Intake manifold vacuum &gt; -2,560.0 hPa</li> <li>Restart temperature difference &gt; 52 K</li> <li>Vehicle speed &gt;= 0 km/h</li> </ul>	• 12.0 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Nagara Threshold Val- works ue	Secondary Parame- ters with Enable கர Conditions	Monitoring Length	MIL Illumina- tion	Component Diagnostic Procedure
	or in whole, is not be mitted.		<ul> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Evap purge valve closed, ready</li> <li>LDP commanded on</li> </ul>	• 120.0 \$	A and liability with respect to the	
Sen- sor Ex- haust	Oxygen Sensors Front Sig- nal Range Check (Check For Sensor At Ambient Air)	<ul> <li>Threshold 1:</li> <li>Signal voltage 3.10 – 4.77 V</li> <li>Threshold 2:</li> <li>Signal voltage 2.50 – 3.06 V</li> <li>Depending on gain factor that actual is used for sensor</li> <li>Difference</li> </ul>	<ul><li>active</li><li>Heater control closed loop</li><li>SAI not active</li></ul>	15.0 s     Multiple     Montage       M	Yrrectness of information in this ob.	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P2431 AIR System Air Flow/ Pressure Sensor Circuit Rang e/ Performanc e Bank 1	Air System Pressure Sensor Ra- tionality Check	Difference between SAI pressure and ambient pressure not (-60.0 – 60.0_ hPa	◆ SAI done ∀ <sup>uebent</sup>	• 0.5 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.
P2432 AIR Sys- tem Air Flow/ Pres- sure Sen- sor Circuit Low Bank 1	Air System Pressure Sensor Sig- nal Range Check	Signal volt- age < 0.5 V		0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2433 AIR Sys- tem Air Flow/ Pres- sure	Air System Pressure Sensor Sig- nal Range Check	• Signal volt- age > 4.5 V		0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to ⇒ S3.6.25 eco
Sen- sor Circuit High Bank 1						ndary Air Injection Sensor 1 G609, Checking", page 721.
AIR Sys- tem Switc hing Valve	Air System Check After SAI	SAI pressure measured with SAI pressure sensor vs. modeled while SAI	<ul> <li>ECT 5 – 108° C</li> <li>IAT 5 – 100° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>SAI pressure</li> </ul>	• 45.0 s • Once / DCY	• 2 DCY	<ul> <li>Check the Secondary Air Injection Solenoid Valve - N112 Refer to</li> </ul>
Stuck Open Bank 1		< 65.0%	sensor ready	<sub>kswagen</sub> AG. Vol	kswagen A G does n	S3.6.26 eco ndary Air In- jection Sole- noid Valve N112, Checking", page 723.
		art or in whole .	IAT 5 – 100° C     Altitude < 2,700.0 m     SAI pressure sensor ready			- Check the Secondary Air Injection Pump Relay -J299- / Sec- ondary Air Injection Pump Motor -V101 Re- fer to
		n porposes, in pe	ate of commit			
			Strato Chirado intonvado val	Protected	.bAnaganek	page 719.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor	Oxygen Sensors Front Open Circuit Ad- justment Voltage (IA)	O2S signal front > 4.77 V	<ul> <li>Modeled exhaust temp. &lt; 750° C</li> <li>O2S ceramic temp. &gt; 720° C</li> <li>Fuel cut off active</li> <li>Heater control closed loop</li> <li>If low fuel signal then wait &gt; 0.0 s</li> </ul>	• 2.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716
Engine Coolant Temperature Sensor 1	Engine Coolant Tempera- ture Sensor Rationality Measured Engine Coolant Temp. Be- low Refer- ence Model	<ul> <li>Range_01:</li> <li>Measured engine coolant temp. not within in a range of the reference model &gt; 11 K</li> </ul>	Modmax_01:     Maximum reference temperature 60° C   (Swagen AG does not guarantee)	• 4.0 s • Multiple	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683
Speed CAN	CAN: CAN- Bus Read- ing Back Sent Mes- sage (Pow- ertrain)	CAN message no feedback	Time after ignition on 500.0 ms	• Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
Com- muni- cation Bus Per-	Check (Power- train)	Global time out receiving no message	Time after ignition on 500.0 ms	450.0 ms     Continuous		- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U010 1 Lost Com- muni- cation with TCM	CAN: TCM CAN Communication With TCM  CAN: Brake Unit CAN:	• Received CAN message no message	Time after ignition on 500.0 ms	(d)HDiy	Spectto the correctness of information in this could be seen to the correctness of information in this could be seen to the correctness of information in this could be seen to the correctness of information in this could be seen to the correctness of information in this could be seen to the correctness of information in the correctness of infor	- Check the CAN-Bus terminal resistance between the Transmission Control Module to the Engine/ Motor Control Module - J623 Refer to  ⇒ C3.6.5 AN-Bus Terminal Resistance, Powertrain, Checking", page 678.
U012 1 Lost Communication With Anti- Lock Brake System (ABS) Control Module "A"	CAN: Brake Unit CAN Communi- cation With Brake Unit	Received CAN message no message	• Time after igni-	• Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance. Checking", page 676.
U014 6 Lost Com- muni- cation With Gate- way "A"	CAN: Gate- way CAN Communi- cation With Gateway	Received CAN mes- sage no message	Time after ignition on 500.0 ms	• 1,000.0 ms • Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
With Instru- ment Panel Clus- ter (IPC) Con-	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	Received     CAN mes-     sage no     message	Time after ignition on 500.0 ms	• 500.0 ms • Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
trol Mod- ule			uby Volkswagen A	G. Volkswagen A	G does not	
U030 2 Soft- ware In- com- pati- bility With Trans- mis- sion Con- trol Mod- ule	CAN: TCM CAN Com- munication With TCM	oses, in part or in whole, is holden in in part or in whole, is holden in its or in whole, is holden in its or in it	• Time after igni- tion on 500.0 ms	• 100.0 ms • Continuous	• 2 DCY range	dates and TSB's. Reprogram as necessary. If none are found, teplace the Transmission Control Module. Refer to appropriate repair manual.
U040 2 Invalid Data Re- ceived From TCM	CAN: TCM CAN Com- munication With TCM	I TOGGIVEU	Time after ignition on 500.0 ms	• 60.0 ms • Continuous	· 2 DCY	- Check for software updates and TSB's. Reprogram as necessary. If none are found, replace the Transmission Control Module. Refer to appropriate repair manual.
Data Re-	CAN: Vehi- cle Speed Sensor CAN Com- munication With Vehi- cle Speed Sensor	<ul> <li>Speed sensor signal: initialization error 327.08 km/h</li> <li>Speed sensor signal: low voltage error 327.25 km/h</li> </ul>		• 1,980.0 ms	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.  - Check the vehicle



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Mod- ule "A"		<ul> <li>Speed sensor signal: sensor error 327.42 km/h</li> <li>Vehicle speed &gt;= 325 km/h</li> </ul>	e of commercial purposes, in part or in whole, is not be	<ul> <li>480.0 ms</li> <li>Continuous</li> <li>2,100.0 ms</li> <li>Continuous</li> </ul>		speed sig- nal. Refer to ⇒ V3.6.29 ehi- cle Speed Signal, Checking", page 729
		Speed sen- sor signal: out of range 326.39 km/h		• 480.0 ms • Continuous		
	CAN: Brake Unit CAN Communi- cation With Brake Unit	<ul> <li>Received data implau- sible mes- sage</li> </ul>	Time after ignition on 500.0 ms	60.0 ms     Continuous		-wCheck for
Data Re-	CAN: Ambient Air Temperature Sensor Communication With Instrument Cluster Module	Ambient temperature value (initial- ization) 0.0 h [-]	Status ambient	• Multiple	· 2 Dey	Check for software updates and TSB's. Reprogram as necessary. If none are found, replace the Body Control Module. Refer to appropriate repair manual.
Data Re- ceived From Instru-	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	Received CAN mes- sage implau- sible mes- sage	Time after ignition on 500.0 ms	600.0 ms     Continuous	• 2 DCY	Check for correct software version and VIN or update software for the IPC Module if available.
ment Panel Clus- ter Con- trol Mod- ule	CAN: Ambient Air Temperature Sensor Communication With Instrument Cluster Module (CBTA)	Ambient temperature value (initial- ization) 0.0 h [-]	Key on     Status ambient temperature from instrument cluster no fault     Electrical check ambient temperature sensor no fault	• 3.0 s • Multiple		If OK, re- place the In- strument Cluster Con- trol Module - J285 Refer to appropri- ate repair manual.

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Criteria and Threshold Val	Secondary Parame- genters with Enable Conditions	Monitoring Length Snot Time	MIL Illumina- tion	Component Diagnostic Procedure
7	CAN: Gateway CAN Communication With Gateway	• Received data implau- sible mes- sage	Time after ignition on 500.0 ms	• 300.0 comms • Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.

## 3.4.2 Engine/Motor Control Module, 2011 MY

DTC / De- scrip-	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val-	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
tion P000	VVT Actua-	• Difference	Time after en-		• 2 DCY	<ul><li>Check the</li></ul>
"A" Cam- shaft Posi- tion Slow Re- spons e Bank 1	tor Intake Slow Re-	between target position vs. actual position > 8	gine start > 1.5 – 3.0 s  • Engine speed 600 – 6,320 RPM  • Oil temperature 748 – 143° CV 1000  • Frequency (normal operation) 7.0 times [-] (CBTA)  • Frequency (normal operation) 4.0 times [-] (CBUA)  • Or (CBTA)	(CBTA)  12.0 s (CBUA)  Multiple	• 2 DCY	Camshaft Adjustment Valve 1 - N205 Refer to  C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672.  Check the Camshaft Position Sensor - G40 Refer to
			• Frequency (CSM) 1.0 times [-] (CBTA)			
						sor -G28 Refer to  E3.6.9 ngine Speed Sen- sor G28, Checking", page 686.

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0010 "A" Camshaft Position Actuator "A" Control Circuit/ Open Bank 1	VVT Actuator Intake Open Circuit	Signal voltage > 4.40 – 5.60 V	Camshaft valve off  Engine speed > 80 RPM  All thought the speed in t	• 0.5 s • Continuous	• 2 DCY	- Check the Camshaft Adjustment Valve 1 - N205 Refer to  □ C3.6.2 amshaft Adjustment Valve 1 N205. Checking". page 672.  - Check the Engine Speed Sensor -G28 Refer to □ E3.6.9 ngine Speed Sensor G28. Checking". page 686.  - Check the Camshaft Position Sensor -G40 Refer to □ C3.6.3 amshaft Position Sensor -G40. Checking", page 674.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0011 "A" Cam- shaft Posi- tion - Tim- ing Over- Ad- vance d or Sys- tem Per- for- manc e Bank 1	tor Intake Target Error		<ul> <li>Time after engine start &gt; 1.5 – 3.0 s</li> <li>Engine speed 600 – 6,320 RPM</li> <li>Oil temperature –48 – 143° C</li> <li>Frequency (normal operation) 7.0 times [-] (CBTA)</li> <li>Frequency (normal operation) 4.0 times [-] (CBUA)</li> <li>Or (CBTA)</li> <li>Frequency (CSM) 1.0 times [-] (CBTA)</li> </ul>			Check the Camshaft Position Sensor - G40 Refer to SC3.6.3 amshaft Position Sensor G40, Checking, page
		Stephologingo Wolney	Profected by D	DA nagsweylo Vyo	AMBURGO TUBURGO STR	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Crank shaft Posi- tion -	Offset	Permissible deviation < -13.5° CRK  Or		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sen- sor -G28 Refer to
Cam- shaft Posi- tion Corre- lation	Check	Permissible deviation > 13.5° CRK				⇒ E3.6.9 ngine Speed Sen- sor G28, Checking", page 686
Bank 1 Sen- sor A						<ul> <li>Check the Camshaft Position Sensor - G40 Refer to</li> <li>⇒ C3.6.3 am-</li> </ul>
						shaft Position Sensor G40, Checking", page 674.
		Sunless authorised by Volks	<sub>W</sub> agen AG. Volkswagen AG	does not guarante.	Orac Celora	Check the     Camshaft     Adjustment     Valve 1 -     N205 Refer     to
	n whole, is not be militing		• Time after en-		A liability with respect	⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672
HO2S Heat- er	Sensors Heater Front Open	age 2.34 – 3.59 V	gine start > 5.0 s  • Heater commanded off	Continuous	he correctness	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to
Sen- sor 1	Things or commer	TO TOUR TOO ILIBURATION RAPE			of information in this good information in this good information in the second	⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking",
		1464Adoo Aqpa	DAnso.	BEWZYJO V KO HIBIY	P	<u>page 716</u> .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S	Oxygen Sensors Heater Front Short To Ground	• Heater voltage < 2.34 V	Time after engine start > 5.0 s     Heater commanded off  Additional commanded off  Additio	• 0.5 s • Continu	• 2 DCY swagen AG does no.	GX10 Refer to
HO2S Heat- er	Oxygen Sensors Heater Front Short To Battery Plus	Heater volt- age > 3.59 V  sesod and people against the second ag	<ul> <li>Time after en- gine start &gt; 5.0 s</li> </ul>	• 0.5 s • Continuous	• 2 DCY	Catalytic Converter GX10, Checking", page 716  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  303.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716  Checking", page 716



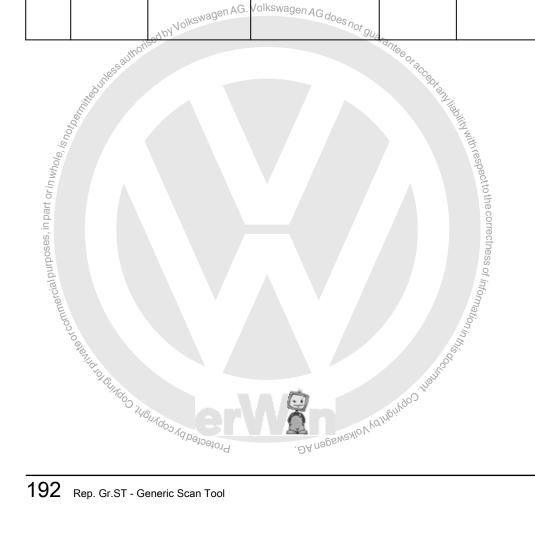
DTC / Monitor De- scrip- tion Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0036 Oxygen H02S Heater er Control Circuit Bank 1 Sensor 2	• Heater voltage 4.50 – 5.50 V	Engine speed > 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Heater commanded off  Heater commanded off  Time after engine start > 5.0 s (CBUA)  Heater commanded off  Heater commanded off  Time after engine start > 5.0 s (CBUA)  Heater commanded off  Time after engine start > 5.0 s (CBUA)  Time after engine start > 5.0 s (CBUA)  Heater commanded off  Time after engine start > 5.0 s (CBUA)	• 0.5 s • Continuous  Aby Volkswagen Aby Volkswagen A	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Checking (CBUA)", page 680.	ox and liability with respect to the correctness of information in this occurs



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er Con- trol	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Ground	• Heater voltage < 3.0 V	Engine speed > 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Heater commanded off  Heater commanded off	O.5 s     Continuous  . Volkswagen AG	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.
		the tot private or commercial purposes, in part or in whole, is not be million to the part of the part	Tago iyo iyo iyo agaa ayaa ayaa ayaa ayaa ayaa ayaa ay	. ĐA ng	Openia Internacional de la compansión de	Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.
					3. Diagno	osis and Testing 191

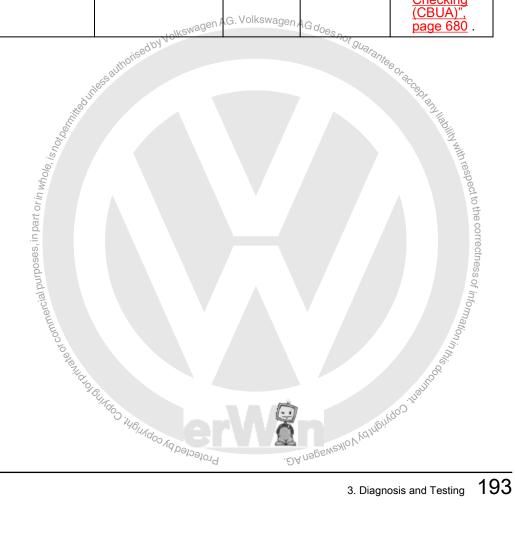


DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er Con- trol	Heater Rear 2 - Point - LSF Short To Battery Plus	Heater current 2.70 – 5.50 A  State of the state of	<ul> <li>Engine speed &gt; 80 RPM (CBTA)</li> <li>Time after engine start &gt; 5.0 s (CBUA)</li> <li>Heater commanded on</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Heat- I er I Con- I	Sensors Heater Rear 2 - Point - LSF Open Cir-	• Heater voltage 4.50 – 5.50 V	Engine speed > 80 RPM     Heater commanded off	O.5 s     Continuous  G. Volkswagen,	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
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DTC / De- scrip- tion	Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er Con- trol Circuit	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Ground	• Heater voltage < 3.0 V	• Engine speed > 80 RPM • Heater commanded off  • AG. Volkswagen AG does not be a speed > 80 RPM • Heater commanded off	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er Con- trol	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Battery Plus	• Heater current 2.70 – 5.50 A	Engine speed > 80 RPM     Heater commanded on	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
Ambi- ent Air Tem- pera-	cnit St commercial purposes, in part or in whole, is not been	• Ambient air temperature	CAN active		• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to ⇒ O3.6.21 ut- side Air
		THOTOLOGINGO THE WAS WAS NOT A	A.G. Protected	Moy Volkswagen	IIII THE	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Ambient Air Temperature Sensor Circuit "A" Rang e/ Performanc e	illed une se authorite e	IAT at engine start (depending on engine off time) < 24.75° C  And  Diff. IAT vs. AAT at engine start (depending on engine off time) > 24.75° C  And  Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C	<ul> <li>Engine off time &gt; 6.0 h</li> <li>Blockheater</li> <li>ECT &gt;= 143° C</li> <li>Time after engine start 2.0 s</li> <li>Or</li> <li>Diff. ECT vs. ECT outlet &lt;= 20° C</li> <li>Time after engine start 2.0 s</li> <li>Solar radiation case 1:</li> <li>AAT @ start &lt;= lksw2gCAG does not guara.</li> <li>Minus</li> <li>AAT @ condition:</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> <li>Solar radiation case 2:</li> <li>IAT @ start &lt;= 2° C</li> <li>Minus</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> </ul>	• 60.0 s • Once / DCY	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  ⇒ O3.6.21 utside Air Temperature Sensor G17, Checking", page 711 .  - Check the CAN-Bus terminal resistance. Refer to ⇒ C3.6.4 AN-Bus Terminal Resistance. Checking", page 676 .
TIMO 10 cd	RAILETO BUILDO JUBILA	Professional designation of the second desig	DA nagen AG.	hindoo julunda sii	ation.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Ambi-	Ambient Air Tempera- ture Sensor Short To Ground	Ambient air temperature > 87° C	CAN active      Can after engine start n.a.	• 6.0 s • Multiple  oyVolkswagen A	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to G3.6.21 utside Air Temperature Sensor G17. Checking". page 711 .  - Check the CAN-Bus terminal resistance. Refer to C3.6.4 AN-Bus Terminal Resistance, Checking". page 676 .
Manifold Absolute Pressure/ Barometric Press	Manifold Pressure Sensor Ra- tionality Check Low	Difference manifold pressure - lower threshold model < 0.0 hPa     Model range 0.0 - 800.0 hPa	• Time after engine start n.a.	<ul> <li>450.0 s</li> <li>Multiple</li> </ul>	• 2 DCY	Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Mod-
sure Sen- sor Circuit Rang e/ Per- for- manc e	Manifold Pressure Sensor Ra- tionality Check High	<ul> <li>Difference manifold pressure - lower threshold model &gt; 0.0 hPa</li> <li>Model range 650.0 – 1,080.0 hPa</li> </ul>		7		J338, Checking", page 726.  - Check the Intake Manifold Sensor - GX9 Refer to ⇒
	Manifold Pressure Sensor Ra- tionality Check	Diff. altitude sensor sig- nal vs. mani- fold pressure signal at en- gine start > 60.0 hPa	<ul> <li>Time after engine start &lt; 25.0 s</li> <li>Engine speed &lt; 330 RPM</li> </ul>			I3.6.15 ntake Manifold Sensor GX9, Checking", page 698
	Manifold Pressure Sensor Adaptation Value Mon- itoring	Offset value manifold pressure for load calcula- tion in driv- ing condition range 2.0 > 55.0 hPa	<ul> <li>Driving condition range 1 (omsna):</li> <li>Engine speed &lt; 800 RPM</li> </ul>			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure								
			<ul> <li>Desired mass flow 5.0 – 25.0 kg/h</li> </ul>											
			load calcula- tion in driv- ing condition range 2.0 <	load calcula- tion in driv- ing condition range 2.0 <	load calcula- tion in driv- ing condition range 2.0 <	load calcula- tion in driv- ing condition range 2.0 <	load calcula- tion in driv- ing condition range 2.0 <	load calcula- tion in driv- ing condition range 2.0 <	load calcula- tion in driv- ing condition	tion in driv- ing condition	Delta adaptation value range 1.0 < 0.10 kg/h			
									• For time 1.0 s					
									Driving condition range 2 (opsra):					
			• Engine speed > 1,400 RPM											
			Manifold pres- sure < 425.0 hPa											
			<ul> <li>Delta adaptation value range 2.0</li> <li>2.97 hPa</li> </ul>											
			For time 8.0 s											
			Driving condition range 3 (opua):											
			<ul> <li>Desired mass flow &gt; 40.0 kg/h</li> </ul>											
			Manifold pres- sure > 550.0 hPa	<sub>(SWagen</sub> AG. Vol	kswagen AG does n									
			Delta adaptation value range 3.0 < 2.97 hPa			of suarantee or accept and lies								
			For time 5.0 s			Cept du								
			• General:			Zlada								
		whole;	in every driving											
		ercial purposes, in part or in who <sub>les</sub>	Diagnosis evap purge system not active											
		poses, i	• Engine speed 500 – 6,000 RPM											
		ercial pul	Manifold pres- sure > 0.0 hPa											
		9	Ratio manifold pressure to ambient pressure < 0.85 [-]			Joseph John John John John John John John Joh								
			A VORTHURO SANDINGO VAN	Profogo	.ĐA nagawey	ON KAMBURDOO HARRORA								



	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Manifold Pressure Sensor Short To Ground	• Signal volt- age < 0.20 V		1.0 s     Continuous	• 2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to
	Baro- metric Pres- sure Sen- sor Circuit	oorised by Volkswa	gen AG. Volkswagen A	G does not guarantee or accept			⇒ T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.
use or commercial purposes, in part or in whole, is horbernin.	Low			Se Oraccepta	Milability with respect to the c		- Check the Intake Manifold Sensor - GX9 Refer to   3.6.15 ntake
part or in whole,	P0108	Manifold	Signal volt-		respect to the G	• 2 DCY	Manifold Sensor GX9, Checking", page 698.  - Check the
ercial purposes, in	Manifold Absolute Pressure/	Pressure Sensor Short To Battery / Open Cir- cuit	age > 4.86 V		Continu-		Throttle Valve Control Module - GX3 / J338 Refer to
wate or comm	Sen- sor Circuit			negewealo V yearhyroo irang	ation in this co.		⇒ T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726
	riigii	HELINGOD ROPAISE	dota .2A	New By Volkswagen			- Check the Intake Mani- fold Sensor - GX9 Refer to
							⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Intake Air Tempera- ture Ration- ality Check	Diff. ECT vs. IAT at engine start (depending on engine off time) > 24.75° C  And Diff. IAT vs. AAT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) < 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) < 24.75° C	<ul> <li>Engine off time &gt; 6.0 h</li> <li>Blockheater</li> <li>ECT &gt;= 143° C</li> <li>Time after engine start 2.0 s</li> <li>Or</li> <li>Diff. ECT vs. ECT outlet &lt;= 20° C</li> <li>Time after engine start 2.0 s</li> <li>Solar radiation case 1:</li> <li>AAT @ start &lt;= 2° C</li> <li>Minus</li> <li>AAT @ condition:</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> <li>Minus</li> <li>IAT @ start &lt;= 2° C</li> <li>Minus</li> <li>Minus</li> <li>For time &gt; 5.0 s</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> </ul>			Radiator Outlet G83, Checking", page 685.
		in part of the property of the part of the	• Solar radiation case 2:  • IAT @ start <= 2° C  • Minus  • IAT @ condition:  • Vehicle speed > 20 km/h  • For time > 5.0 s	- ĐA na Đư	Weshighton Volksw	the correctness of information in this octupa



DTC / Monitor	Generic Scan Tool - Edition 07.2022									
DTC / Monitor De- Strategy Scription	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure					
P0112 Intake Air Intake Air Temperature Sensor Short To Ground Circuit Low Bank 1	• IAT > 130° C		5.0 s     Multiple  Meswagen AG. Vo	• 2 DCY	- Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9. Checking", page 698.  - Check the Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62. Checking", page 683.  - Check the Engine Coolant Temperature Sensor G62. Checking", page 683.  - Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to					
	ola purposes, in part or in w. E.	To Demindo to alegundo de la		DA Negewe	E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.					

<b>\( \)</b>		SportWagen, Gol an Tool - Edition (		sed by Volkswage	n AG. Volkswagen A	NG does not guarante
DTC De- scrip- tion	Strategy	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Disagnostic Procedure
P0113 Intake Air Temperature Sensor 1 Circui High Bank 1	ture Sensor Short To Battery / Open Cir- cuit	• IAT < -46° C	Continue of commercial purposes, in part or in whole, is not be in part or in the part of the p	• 5.0 s • Multiple	a .5A	- Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake  Manifold Sensor GX9. Checking", page 698.  - Check the Engine Coolant Temperature Sensor G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.  - Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.



P0116 Engine Coolant Temperature Sensor and Temperature Sensor 1 Circuit Rang e/Performanc e  Performanc e  Poly Respective Sensor 1 Circuit Rang e/Performanc e  Performanc e  Performa	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
DA Nagewesho Veding in the Copyright of	Engine Coolant Temperature Sensor 1 Circust Perform e	Coolant Tempera- ture Sensor Stuck Low	No change or signal 1.5 K	<ul> <li>ECT @ start n.a.</li> <li>ECT 50 – 75° C</li> <li>Cold start n.a.</li> </ul>	• Once / DCY  Once / DCY  Once / DCY		Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62. Checking". page 683 .  - Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking". page 685 .  - Check the engine coolant thermostat. Refer to appropriate repair man-



	<ul> <li>Temp_01</li> <li>ECT @ start n.a.</li> <li>ECT 105 – 140° C</li> <li>Cold start n.a.</li> <li>Temp_02</li> <li>Substitute ECT &gt; -45° C</li> <li>Driving condition L:</li> <li>Vehicle speed 0 – 20 km/h</li> <li>Mass air flow 4.0 – 40.0 kg/h</li> <li>Time required / &gt; 10.0 s</li> <li>Frequency 3.0 times</li> <li>And</li> <li>Driving condition H:</li> <li>Vehicle speed 50 – 150 km/h</li> </ul>	blkswagen AG. Vo	olkswagen AG does	s not guarantes
	<ul> <li>ECT 105 – 140° C</li> <li>Cold start n.a.</li> <li>Temp_02</li> <li>Substitute ECT &gt; -45° C</li> <li>Driving condition L:</li> <li>Vehicle speed 0 – 20 km/h</li> <li>Mass air flow 4.0 – 40.0 kg/h</li> <li>Time required / &gt; 10.0 s</li> </ul>	blkswagen AG. Vo	olkswagen AG does	S not guarantes
	C Cold start n.a. Temp_02 Substitute ECT > -45° C Driving condition L: Vehicle speed 0 - 20 km/h Mass air flow 4.0 - 40.0 kg/h Time required / > 10.0 s	<sub>blikeW</sub> agen AG. V	olkswagen AG does	S not guarantee or accept the
	<ul> <li>Temp_02</li> <li>Substitute ECT &gt; -45° C</li> <li>Driving condition L:</li> <li>Vehicle speed 0 - 20 km/h</li> <li>Mass air flow 4.0 - 40.0 kg/h</li> <li>Time required / &gt; 10.0 s</li> </ul>	blkswagen AG. Vo	plkswagen AG does	S not Quarantes
	<ul> <li>Substitute ECT &gt; -45° C</li> <li>Driving condition L:</li> <li>Vehicle speed 0 - 20 km/h</li> <li>Mass air flow 4.0 - 40.0 kg/h</li> <li>Time required / &gt; 10.0 s</li> </ul>	blikswagen AG. Vo	olkswagen AG does	S not guarantes
	<ul> <li>-45° C</li> <li>Driving condition L:</li> <li>Vehicle speed 0 – 20 km/h</li> <li>Mass air flow 4.0 – 40.0 kg/h</li> <li>Time required / &gt; 10.0 s</li> </ul>	<sub>blkeW</sub> agen AG. V	olkswagen AG does	S Tot guarantes
	<ul> <li>Vehicle speed 0 – 20 km/h</li> <li>Mass air flow 4.0 – 40.0 kg/h</li> <li>Time required / &gt; 10.0 s</li> </ul>	blkswagen AG. Vo	olkswagen AG does	S not Quarantee
	<ul> <li>- 20 km/h</li> <li>Mass air flow 4.0         <ul> <li>- 40.0 kg/h</li> </ul> </li> <li>Time required / &gt;         <ul> <li>10.0 s</li> </ul> </li> </ul>	<sub>blksW</sub> agen AG. Vo	olkswagen AG does	S not guarantes
	<ul> <li>- 40.0 kg/h</li> <li>• Time required / &gt; 10.0 s</li> </ul>	<sub>blkswagen</sub> AG. Vo	olkswagen AG d <sub>oes</sub>	s not guarantes
	10.0 s	<sub>bliksW</sub> agen AG. Vo	olkswagen AG d <sub>oes</sub>	s not guarantee
	<ul> <li>Frequency 3.0 times</li> <li>And</li> <li>Driving condition H:</li> <li>Vehicle speed 50 – 150 km/h</li> </ul>	<sub>bliksw</sub> agen AG. Vo	olkswagen AG does	S Tot guarantee
	<ul> <li>And</li> <li>Driving condition         H:         <ul> <li>Vehicle speed 50</li> <li>– 150 km/h</li> </ul> </li> </ul>	blkswagen AG. Vo	olkswagen AG d <sub>oes</sub>	s not guarantee
	Driving condition     H:     Vehicle speed 50     – 150 km/h	<sub>olksw</sub> agen AG. Vo	olkswagen AG does	S not guarantee
	Vehicle speed 50     – 150 km/h			"antes
				Oraco
	<ul> <li>Mass air flow 32.0 – 352.0 kg/h</li> </ul>			Shi An
	• Time required / > 40.0 s			
	o` _			
or transfer, in part	Cobridation of the Commercial purposes, in part of the Commercial			SWO NO WOMON TO THE WOOD
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
	Engine Coolant Tempera- ture Sensor Stuck In Range	Signal in range 75.0 – 105.0° C  And  No change on signal n. a.	ted  Stuck high n.a.  Temp_01  ECT @ start n.a.  Temp_02  Substitute ECT n.a.  Driving condition L:  Vehicle speed n.a.  Mass air flow n.a.  time required / n.a.  Frequency n.a.  And  Driving condition H:  Vehicle speed n.a.  Time required / n.a.  Time required / n.a.		Volkswagen AG do	Des not guarantee of accepts	With tespect to the context of in
			Frequency n.a.	Protected by	- ĐA naga	EMSHON AGILDUNGOO TRAINS	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0117 En- gine Cool- ant Tem- pera- ture Sen- sor 1 Circuit Low	Engine Coolant Tempera- ture Sensor Short To Ground	• ECT > 140° C  C  Seemood of the seed of	Protected by cop		Puarantee or acceptant	E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683  Check the Engine Coolant Temperature Sensor on Radiator Gutlet -G83- Refer to E3.6.8 ngine



Temperature Sensor and Temperature Sensor of Circuit High   Sensor of Circuit High	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Engine Cool ant Temperature Sensor on Radiator Outlet -G83-Refer to  3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83-Refer to  3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.  - Check the engine coolant thermostat. Refer to appropriate repair manual.	Engine Coolant Temperature Sensor 1 Circuit	Coolant Tempera- ture Sensor Short To Battery / Open Cir- cuit				• 2 DCY	Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking",
Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.  Check the engine cool- ant thermo- stat. Refer to appropriate repair man- ual.							Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83
P0121 Throttle Po- Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit Rang e/ Per- for- manc			agss authorised by Volks	<sub>N</sub> agen AG. Volkswagen AG (	loes not guarantee	Dr. accom	E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.
P0121 Throttle Po- Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit Rang e/ Per- for- manc P0121 Throttle Po- sition Sen- sor/ Switc h "A" Circuit Rang e/ Per- for- manc P0121 Throttle Po- sition Sen- sor/ Switc h "A" Circuit Rang e/ Per- for- manc P0121 Throttle Po- sition Sen- sor/ Switc h "A" Circuit Rang e/ Per- for- manc P0121 Throttle Po- sition Sen- sor/ Switc h "A" Circuit Rang e/ Per- for- manc P0121 Throttle Po- sition Sen- sor/ Ra- tionality Check  And  And  Actual TPS1 - calc. value > actual TPS2 - calc. value > Or  TPS1 - calc. value > 9.0%  TPS1 - calc. value > 9.0%		whole, is not postilities.				estany liability with respe	<ul> <li>Check the engine cool- ant thermo- stat. Refer to appropriate repair man- ual.</li> </ul>
sor/ Switc h "A" Circuit Rang e/ Per- for- manc  TPS1 - calc. value  > actual TPS2 - calc. value  > T3.6.28 hrot tle Valve Control Mod ule GX3 / J338, Checking", page 726.	Throt- tle/ Pedal Posi- tion	sorg Ra- tionality Check	• And	• Engine speed > 480 RPM	• 0.3 s • Multiple	2 DCY     2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to
for- manc value > 9.0%	sor/ Switc h "A" Circuit Rang e/	ingle of commercial pu	- calc. value > actual TPS2 - calc. value			of information in this &	T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking",
indo Value Court of the Court o	for-	, C	value > 9.0%		SWENIO VOMBING	o J. Jahres	<del></del>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0122 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit Low	sor 1 Out Of Range Low	age < 0.20 V		• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  3
P0123 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit High	Throttle Position Sensor 1 Out Of Range High	Signal voltage > 4.81 V  Angle > 4.81 V  Angle Seathforised by Volks  Angle Seathforised by Volks	Nagen AG. Volkswagen AG.	• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P0130 O2 Sen- sor Circuit Bank 1 Sen- sor 1	Sensors Front Out	• O2S ceramic temp. < 640° C	temp > 300° C	Multiple	Ato the correctness of information in this occurs	Oxygen
	1	A JUSUANOONA POJ	BAna <sub>t</sub>	<sub>РЕМЕ</sub> НО V КАТАВТИС	<del>lo</del>	



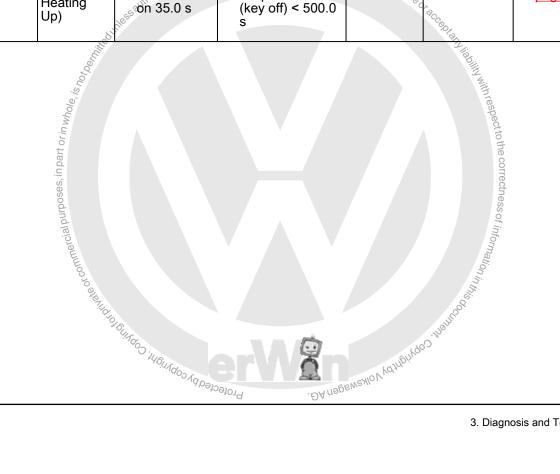
DTC / Moni De- scrip- tion Descri	egy	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion AG d	Component Diagnostic Procedure
P0131 Oxyger O2 Sensor Sen-Front S sor nal Rar Circuit Low Voltage Bank 1 Sensor 1	rs Sig- Inge	<ul> <li>Short to ground</li> <li>Virtual mass (VM) &lt; 1.75 V</li> <li>Or</li> <li>Nernst voltage (UN) &lt; 1.50 V</li> <li>Or</li> <li>Adjustment voltage (IA) &lt; 0.30 V</li> <li>Or</li> <li>Adjustment voltage (IP) &lt; 0.30 V</li> </ul>	Stort or in whole, is not or in whole, is not only whole of commercial purposes, in part or in whole, is not only the paper of the pape	• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  3 O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P0132 Oxyger Sensor Sensor Sensor Front S nal Rar Check High Voltage Bank 1 Sensor 1	rs Sig- Inge	<ul> <li>Short to battery</li> <li>Virtual mass (VM) &gt; 3.25 V</li> <li>Or</li> <li>Nernst voltage (UN) &gt; 4.40 V</li> <li>Or</li> <li>Adjustment voltage (IA) &gt; 7.0 V</li> <li>Or</li> <li>Adjustment voltage (IP) &gt; 7.0 V</li> </ul>	THE TOP BUILD THE WASHINGTON	• 5.0 s • Multiple  ○Λαροβοροβολο	• 3 DCA	Oxygen Sensor Before Cata- lytic Con-



De- Strategy	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enables was Conditions	Monitoring Length Gen Time On Time	14gra	Component Diagnostic Procedure
e Bank 1 Sensor 1 Sensor 1 Sensor 1	Difference of R2L area ratio vs. L2R area ratio -0.40 - 0.40 - 0.40 - 0.40 - 0.40 - 0.25 [-] (CBTA) Lower value of both area ratios R2L and L2R < 0.25 [-] (CBTA) Lower value of both area ratios R2L and L2R < 0.35 [-] (CBUA) And Difference of R2L area ratio vs. L2R area ratio not (-0.40 - 0.40) [-]	<ul> <li>O2S front - min. operation temperature is reached &gt; 720° C</li> <li>O2S front - time since operation readiness &gt; 40.0 s</li> <li>Engine speed 1,160 - 2,720 RPM</li> <li>Engine load 13.99 - 45.0%</li> <li>Gradient of engine load &lt;= 7.99%</li> <li>Exhaust system lag time calculation 0.15 - 0.33 s</li> <li>Gradient of exhaust system lag time calculation &lt;= 0.0 s</li> <li>ECT &gt;= 10° C</li> <li>Catalyst temperature &gt;= 450° C</li> <li>Lambda control set-point prior to diagnostic fuel steps A/F-ratio stoichiometric</li> <li>Relative fuel amount from wall applied compensation and evap purge &lt;= 0.1 [-]</li> <li>Canister load &lt; 15.0 [-]</li> <li>Time since last measurement &gt; 3.0 s</li> <li>2nd lambda control loop not active</li> <li>Forced lambda oscillation not active</li> <li>SAI not active</li> <li>Tank leakage de-</li> </ul>	• 67.0 s • Once / DCY	· 2° DCY	verter - GX10 Re- fer to  03.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking",



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
D0135	Oxygen	O2S ceramic	<ul> <li>Diagnosis evap purge system not active</li> <li>Fuel cut off for any cylinders not active</li> <li>Open circuit pump current (IP) ready</li> <li>Only Flex fuel systems without ethanol sensor:</li> <li>Ethanol concentration adaptation not active</li> <li>Modeled exhaust</li> </ul>	• 70.0 s	• 2 DCY	- Check the
O2 Sen- sor Heat- er Cir- cuit Bank 1 Sen-	Sensors Heater Front Out Of Range	<ul> <li>O25 ceramic temperature &lt; 720° C</li> <li>And</li> <li>Heater duty cycle &gt; 100.0%</li> </ul>	gas temp. > 550° C  Heater control active	Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  3 O3.6.23 xy-
sor 1	Oxygen Sensors Heater Front Ra- tionality Check (Sensor Heating Up)	O2S ceramic temp < 715° C  And Time after Q2S heater on 35.0 s	ECT at start > -10° C  Engine shutoff agertime 120.0 s A G of the latest time (key off) < 500.0 s	• 35.0 s • Multiple  Pes not Guarantee o	raccap <sub>ian</sub>	O3.6.23 Xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.





PO136 Oxygen O2 Sensors Sen- Rear 2 - sor Point L LSF Circuit O2S Signal Bank Check - 1 Sensor Voltage Check)  Number of heater coupling >= 6.0 timusty Sensor voltage Check)  Number of heater coupling >= 6.0 times [] Sensor voltage Check)  Sensor voltage Senso	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	O2 Sen- sor Circuit Bank 1 Sen-	Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Heater Coupling Check)	age one step at heater switching > 2.0 V  • And  • Number of heater coupling >= 6.0 times [-] his way age authorised by [-] his way age at the coupling seatth of the coupling seatth o	ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 × 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s (CBTA)  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)  For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)  For time > 18.0 s (CBTA)  For time > 18.0 s (CBUA)  For time > 18.0 s (CBUA)	• Multiple	contraction in this coordinate of the correctness o	Oxygen



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0137 O2 Sensor Circuit Low Voltage Bank 1 Sensor 2	Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity	Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3 measurements) < 0.01 V	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a. (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° Color (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Fuel cut off not active</li> <li>Catalyst purge not active</li> </ul>			aur	A liability with respect to the correctness of information in this of
			1461Walos	Profected by	.DA riegs	MeMO VOHIBIYOO JAR	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0138 O2 Sen- sor Circuit High Volt- age Bank 1 Sen- sor 2	Battery Plus)	• Signal voltage > 1.08 V • For time > 5.0 s	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Lambda set value &gt; 0.995 [-]</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
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DTC / De- scrip- tion	Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Slow Re- spons e Bank	Oxygen Sensors Rear (Binary LSF) Check Of Transient Time At Fuel Cut Off	EWMA filtered transient time at fuel cut off > 0.6 s     O2 voltage between 201.0 – 401.0 mV     Number of checks (initial phase) >= 4.0 [-]     Number of checks (step function) >= 3.0 [-]	• Front O2 - sen- sor lambda sig- nal > 4.0 [-]	• 4.5 s • Multiple  adoes not guarant  abensilo Natura	• 1 DCY	Oxygen Sensor 1 Af- ter Catalytic Converter -



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P013 A O2 Sen- sor Slow Re- spons e- Rich to Lean Bank 1 Sen- sor 2	O2 Sensor Slow Re- sponse - Rich to Lean Bank 1 Sensor 2	EWMA filtered max differential transient time at fuel cutoff >= 0.8 s     And     Number of checks >= 1.0 [-]  Market at the cutoff of checks >= 1.0 [-]	<ul> <li>Time of fuel cutoff &lt;= 90.0 s</li> <li>Time after last fuel cutoff &gt;= 5.0 s</li> <li>Rear O2S ready</li> <li>Exhaust temp at sensor deviation between actual and expected lambda signal &lt; 8 after time since fuel cutoff at first cylinder &gt;= 2.0 s</li> <li>Exhaust mass flow &gt;= 12.0 kg/h</li> <li>Exhaust mass flow dynamic within range -500.0 - 500.0 kg/h</li> <li>Sensor voltage at start of measurement &gt; 0.45 V</li> <li>Target voltage end of measurement &lt;= 0.15 V</li> </ul>	• 10.0 s	• 1 DCY	- For CBTA: Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - For CBUA: Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
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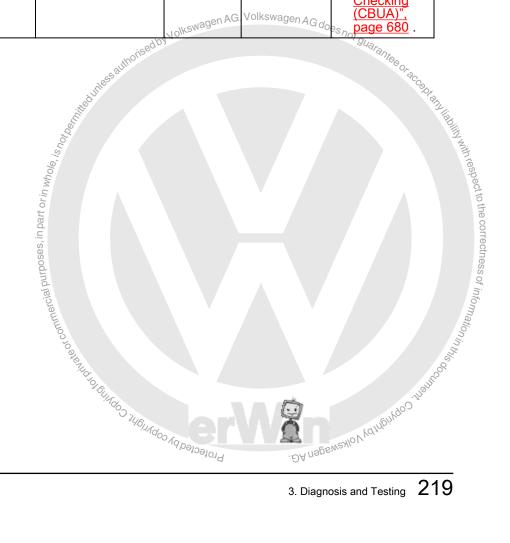
De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- PAG do tion PAG do tion PAG do tion	Component Diagnostic Procedure
Sen-sor Circuit No CI Activity Detected Bank 1 O	ensors lear 2 - loint - LSF 02S Signal check - circuit Con- nuity	<ul> <li>Signal voltage 0.40 – 0.60 V</li> <li>For time 3.0 s</li> <li>Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) &gt;= 2.80 V</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> </ul>	• 5.0 s • Multiple	A nagswaylov kant	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xye gen Sensor 1 After Cata- lytic Converter GX7. Checking", page 713



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen	Internal re-	Case 1: sensor	• 50.0 s		
	Sensors Rear 2 -	sistance > 40,000.0 Ω	ready for opera- tion	<ul> <li>Multiple</li> </ul>		
	Point - LSF O2S Signal Check -	And     Exhaust	• Sensor voltage <= 0.40 V			
	Circuit Continuity	temperature	• Or			
	(Sensor Ground	> 670° C	• Sensor voltage 0.50 – 1.08 V			
	Line Open Circuit)		Case 2: sensor theoretical ready for operation			
			• For time > 12.0 s (CBTA)			
			• For time > 22.0 s (CBUA)			
			Sensor sufficient heated up if explore haust tempera- ture >= 1,263° C	lkswagen AG do	es not guarantee or acc	
		inless all	• For time > 18.0 s (CBTA)		. de o <sub>r</sub> acc	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
		William Co.	• For time > 8.8 s (CBUA)			( RID   ROBERT   ROBE
		Shoth	• Or			T WILL
		Whole, i.	• Heater power >= 24.0%			respect
		oart or in	• For time > 18.0 s (CBTA)			t to the o
		ses, in p	• For time > 8.8 s (CBUA)			orrectne
		purpo	General:			SS Of
		mercial	Dew point exceeded			informa
		ymake of com	Valid Ri-meas- urements > 10.0 times [-]			t and liability with respect to the correctness of information in this occ
		* OJ BUJAGO	For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)  For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  General:  Dew point exceeded  Valid Ri-measurements > 10.0 times [-]	.DA nage	if: Copyright by Volksw	aut.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0141 O2 Sen- sor Heat- er Cir- cuit Bank 1 Sen- sor 2	Sensors Heater Rear 2 -	<ul> <li>Heater resistance         1,200.0 –         32,400.0 Ω         (CBTA)</li> <li>Heater resistance         880.0 –         30,400.0 Ω         (CBUA)</li> </ul>	Modeled exhaust gas temp. 200 – 680° C     Engine shut-off-time > 120.0 s     (During ECM keep alive-time after ignition off) < 500.0 s (CBTA)     (During ECM keep alive-time after ignition off) < 1,200.0 s (CBUA)     Number of checks 10.0 [-]     Fuel cut off not active     Heater commanded on	• Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	Translability with
O2 Sen- sor Circuit Bank 1 Sen- sor 3	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Heater Coupling Check)	<ul> <li>Delta voltage one step at heater switching &gt; 2.0 V</li> <li>And</li> <li>Number of heater coupling &gt;= 6.0 times [-]</li> </ul>	<ul> <li>Case 1 sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 1.08 V</li> <li>Case 2 sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>For time &gt; 10.0 s</li> <li>Heater not active</li> <li>For time &gt; 0.0 s</li> </ul>	• 60.0 s • Multiple	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 . Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .	ce of acceptany liability with respect to the correctness of information in this object.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Low Volt- age Bank 1 Sen- sor 3	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity (Short To Ground, Core Con- nection Sig- nal Wires)	<ul> <li>Signal voltage &lt; 0.06 V</li> <li>For time &gt; 3.0 s</li> <li>And</li> <li>Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) &lt; 0.01 [V]</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a.</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time n.a.</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Fuel cut off not active</li> <li>Catalyst purge not active</li> </ul>	• 3.0 s • Multiple	• 2 DCY	<ul> <li>Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to</li> <li>⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680</li> <li>Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to</li> <li>⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713</li> </ul>
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina-	Component Diagnostic Procedure
Sen- sor	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Out Of Range High (Short To Battery Plus)	Signal voltage > 1.08 V  For time > 5.0 s	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Lambda set value &gt; 0,995 [-]</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to \$\infty\$ \$



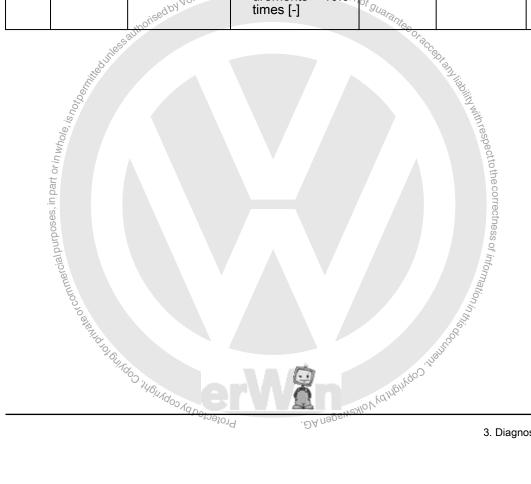
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Slow Re- spons e Bank	Oxygen Sensors Rear (Bina- ry LSF) Check Of Transient Time At Fuel Cut Off	EWMA filtered transient time at fuel cut off > 1.5 s      In voltage range 201.0 – 401.0 mV      Number of checks (initial phase) >= 4.0 [-] kswalan AG. Volkswalan AG	<ul> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 - sensor internal resistance &lt;= 131,070.0 Ω</li> <li>Or</li> <li>Trigger for step change: delta transient time &gt; 0.3 s</li> </ul>	4.5 s     Multiple  A.5 s     Multiple  A.5 s  A.5 s	• 1 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 Check the Oxygen Sensor 1 After Catalytic Converter GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .
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PO146 Oxygen Sensors Rear 2 - 0.80 V Sensors Rear 2 - 0.80 V Sensors Corcuit Conclust Construction of the Converted Signal Line 1 Oxygen Circuit 1 Sensor 3 ox 3



DTC / Monitor De- scrip- tion Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Ground Line Open Circuit)	<ul> <li>Internal resistance &gt; 40,000.0 Ω</li> <li>And</li> <li>Exhaust temperature &gt; 670° C</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>As Validy Ri-measurements &gt; 10.0 s</li> <li>times [-]</li> </ul>	• 50.0 s • Multiple		





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0147 O2 Sen- sor Heat- er Cir- cuit Bank 1 Sen- sor 3	Oxygen Sensors Heater Rear 2 - Point - LSF Out Of Range	• Heater resistance 1,200.0 – 32,400.0 Ω	Modeled exhaust gas temp. 200 – 680° C     Engine shut-off-time > 120.0 s     (During ECM keep alive-time after ignition off) < 500.0 s     Number of checks 10.0 [-]     Fuel cut off not active     Heater commanded on  Internal engine	Multiple	• 2 DCY	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713	, threspect
rect Fuel Com-	ECM: EGAS Module Function Monitoring: Injection Time ECM: EGAS Module Function Monitoring: Lambda Mode ECM: EGAS Module Function Monitoring: Lambda Mode COM: COM: COM: COM: COM: COM: COM: COM:	with fuel & quantity in-correct seed and led check failed	• Internal engine speed > 1,200 RPM	Continuous	• 2 DCY	contamina- ted/aged fuel or possible high concen- tration of al- cohol in fuel (above 15%). Poor quality fuel will also in- crease con- sumption. Replace with fresh fuel if believed to	(espect to the concerness of informas:



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Fuel quantity incorrect				O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
						<ul> <li>If fuel quality is adequate, replace the Engine/ Motor Control Module.</li> <li>Refer to appropriate repair manual.</li> </ul>
P0201 Cylin- der 1 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> <li>AG. Volkswagen AG</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0202 Cylin- der 2 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0203 Cylin- der 3 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit tradui 'sessod	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
Cylin- der 4 Injec- tor "A" Circuit	Open Circuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY Information in this course	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0205 Cylin- der 5 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	Signal voltage 4.50 – 5.50 V	Injection valve switched off  Engine speed > 80 RPM  Page 1014	O.5 s Continue ous Karl	• 2°DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0221 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "B" Circuit Rang e/ Per- for- manc e	sition Sen- sor 2 Ra- tionality Check	TPS1 - TPS2 > 6.30%  And  Actual TPS2 - calc. value > actual TPS1 - calc. value  or  TPS2 - calc. value > 9.0%	Engine speed > 480 RPM  OIKSWagen AG. Volkswagen  OIKSWagen AG. Volkswagen	• 0.3 s • Multiple  AG does not guara	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P0222 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "B" Circuit Low	sition Sensor 2 Out Of Range Low sesodand reignammed Jo	• Signal volt- age < 0.20 V		• 0.1 s • Multiple	• 2 DCY	Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
P0223 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "B" Circuit High	Throttle Position Sensor 2 Out Of Range High	Signal volt- gage > 4.81 V	Je. Protected b	• 0.1 s • Multiple  • Multiple	• 2 DCYS	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P0261 Cylinder 1 Injector "A" Circuit Low	Short To	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0262 Cylinder 1 Injector "A" Circuit High	Short To Battery Plus	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- uen AG. Vol	Secondary Parameters with Enable Conditions  (SWagen AG GORD CONDITION CONDI	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0264 Cylinder 2 Injector "A" Circuit	Injection Valves of Short To Ground	Signal voltage < 3.0 V	Injection valve switched off     Engine speed > 80 RPM	• 0.5 s • Continu- ous		<ul> <li>Check the Fuel Injectors. Refer to</li> <li>F3.6.13 uel Injectors, Checking", page 694</li> </ul>
	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	O.5 s     Continuous	2 DCY	<ul> <li>Check the Fuel Injectors. Refer to</li> <li>F3.6.13 uel Injectors, Checking", page 694</li> </ul>
P0267 Cylin- der 3 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	•ss of inform	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
Cylin-	Injection Valves Short To Battery 40000 Plus	• Signal current 2.20 – 4.0 A	Injection valve switched on     Engine speed > 80 RPM     RPM     ON THE STATE OF THE SWINGS OF THE SWITCH OF	• 0.5 s	• 2 DCY	<ul> <li>Check the Fuel Injectors. Refer to</li> <li> <del>\$\frac{1}{2}\$</del>         F3.6.13 uel Injectors, Checking", page 694</li> </ul>
P0270 Cylinder 4 Injector "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the Fuel Injectors. Refer to</li> <li>F3.6.13 uel Injectors, Checking", page 694</li> </ul>
Cylin- der 4	Injection Valves Short To Battery Plus	• Signal cur- rent 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the Fuel Injectors. Refer to</li> <li>F3.6.13 uel Injectors, Checking", page 694</li> </ul>
P0273 Cylinder 5 Injector "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the Fuel Injectors. Refer to</li> <li>⇒ F3.6.13 uel Injectors, Checking", page 694</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
der 5 Injec- tor "A" F Circuit High	Injection Valves Short To Battery Plus Misfire	<ul> <li>Signal current 2.20 –</li> <li>4.0 A</li> </ul> • Emission	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> <li>Active after en-</li> </ul>	<ul><li>0.5 s</li><li>Continuous</li><li>1,000</li></ul>	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694  - Check the
Ran- C dom/ S Multi- F ple (	Crankshaft Speed Fluctuation (Single Or Multiple)	threshold misfire rate (MR) > 2.0%	gine start idle – 150 RPM + 1 camshaft rev  • Engine speed range 500 – 6,400 RPM • Engine torque >= 0.0 Nm  • IAT > - 48° C • ECT @ start > - 48° C • Fuel cutoff not	rev • Multiple  JIKSWagen AG. Vo	olkswagen AG does	intake system visually for leaks (false air).  Check the spark plugs visually for signs of fouling.  Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup re-



	50			P.		
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0301 Cylinder 1 Misfire	Misfire Crankshaft Speed Fluctuation (Single Or	<ul> <li>Catalyst damage misfire rate (MR) &gt; 3.4 – 20.3% (CBTA)</li> <li>Catalyst damage misfire rate (MR) &gt; 3.4 – 20.0% (CBUA)</li> <li>Emission threshold misfire rate (MR) &gt; 2.0%</li> </ul>	Active after engine start idle – 150 RPM + 1 camshaft rev	• Multiple	• Immediately  • 2 DCY	F3.6.13 uel Injectors, Checking", page 694.  Check the Ignition Coils with Power Output Stage. Refer to  3.6.14 gnition Coils With Power Output Stage, Checking", page 696.  Check the intake system visually for leaks (false air).
Detected	Multiple)		<ul> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not detected</li> </ul>			<ul> <li>Check the spark plugs visually for signs of fouling.</li> <li>Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.</li> <li>Check the fuel pressure and delivery quantity. Refer to fuel system me-</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage misfire rate (MR) > 3.4 – 20.3% (CBTA)  Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)		200 rev     Multiple	Immediately	chanical testing in  C3.1 heck", page 14 and/or to appropriate repair manual.  Check the Fuel Injectors. Refer to F3.6.13 uel Injectors, Checking", page 694  Check the
		Messanto ised by Volks	<sub>N</sub> agen AG. Volkswagen AG o	loes not guarante <sub>s</sub>	of according to the state of th	Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gni- tion Coils With Power Output Stage.
Cylin- der 2 Mis- fire	Misfire Crankshaft Speed Fluctuation (Single Or	• Emission threshold misfire rate (MR) > 2.0%	Active after engine start idle –     150 RPM + 1 camshaft rev	• 1,000 rev • Multiple	• 2 DCY respect to the	Check the intake system visually for leaks (false air).
De- tected	Multiple)		range 500 – 6,400 RPM • Engine torque >= 0.0 Nm • IAT > - 48° C		correctness of info	Check the spark plugs visually for signs of fouling.
	on commer	DIBINGOD WADEN	ECT @ start > -     48° C     Fuel cutoff not active     Rough road not detected     □	Бемежно V чатериу	correctness of information in this document.	- Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low com-



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage misfire rate (MR) > 3.4 – 20.3%		<ul><li>200 rev</li><li>Multiple</li></ul>	Immediately	pression readings or for carbon buildup re- moval.
		(CBTA)  • Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)	<sub>en</sub> AG. Volkswagen AG do <sub>es</sub>			Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
	ite diliké	Sautorised by Von		of guarantee or act	8018 Day	C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
	Ve, is not bem				ablitis) with res	<ul><li>Check the Fuel Injectors. Refer to</li></ul>
	in part or in who				spect to the corr	F3.6.13 uel Injectors, Checking", page 694.
	nmercial purposes,		• Active after enquire start idle sen		ectness of informat	Check the Ignition Coils with Power Output Stage. Refer to
	100 to 9/8/11/4/4/4/4/4/4/4/4/4/4/4/4/4/4/4/4/4/	663			on in this go	I3.6.14 gni- tion Coils With Power Output Stage, Checking",
P0303	Misfire	• Emission	Active after en-	*017,000	• 2 DCY	page 696 .  - Check the
der 3 Mis- fire	Speed Fluctuation (Single Or	threshold misfire rate (MR) > 2.0%	150 RPM + 1 camshaft rev	rev  • Multiple	2 501	intake sys- tem visually for leaks (false air).
De- tected	Multiple)		• Engine speed range 500 – 6,400 RPM			Check the spark plugs
			• Engine torque >= 0.0 Nm			visually for signs of foul- ing.
			• IAT > - 48° C			<ul><li>Check for an</li></ul>
			• ECT @ start > - 48° C			engine me- chanical
			Fuel cutoff not active			fault with a cylinder compression test. Carbon buildup may



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage mis- fire rate (MR) > 3.4 – 20.3% (CBTA)	Rough road not detected	<ul><li>200 rev</li><li>Multiple</li></ul>	Immedi- ately	cause a higher than normal com- pression reading and may contrib- ute to this
		Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)	thorised by Volkswagen AG. V	olkswagen AG da	Desnot guarantee orac	concern. Refer to appropriate repair manual for low compression readings or
		or in whole, is not be miles				buildup re- moval.  - Check the fuel pressure and delivery quantity. Re-
		nmercial purposes, in part	Sinoised by .			fer to fuel system me- chanical testing in  C3.1 heck", page 14 and/or to ap- propriate re-
		100 10 alenia do 10 10 10 10 10 10 10 10 10 10 10 10 10				pair manual.  - Check the Fuel Injectors, Refer to
			Protected by copyright,	.DAnag.	Waxio V Yahizhiya O.	F3.6.13 uel Injectors, Checking", page 694.
						- Check the Ignition Coils with Power Output Stage. Refer to
						∃3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696 .
Cylin- der 4 Mis- fire	Misfire Crankshaft Speed Fluctuation (Single Or	Emission threshold misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle –         150 RPM + 1         camshaft rev</li> <li>Engine speed</li> </ul>	• 1,000 rev • Multiple	• 2 DCY	Check the intake system visually for leaks (false air).
De- tected	Multiple)		range 500 – 6,400 RPM			Check the spark plugs



DTC / De- scrip- tion	Strategy	teria and	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
De-	Strategy	teria and		Length Time  • 200 rev  • Multiple	• Immediately	visually for signs of fouling.  - Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.  - Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in C3.1 heck", page 14 and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to Checking in Checking
						- Check the Ignition Coils with Power Output Stage. Refer to       3.6.14 gnition Coils With Power Output



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						<u>Stage,</u> <u>Checking",</u> page 696
Cylinder 5 Misfire Detected	Speed Fluctuation (Single Or Multiple)	Emission threshold misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> </ul>	• 1,000 rev	• 2 DCY	<ul> <li>Check the intake system visually for leaks (false air).</li> <li>Check the spark plugs visually for signs of fouling.</li> </ul>
		. A.G. VO	ECT @ start > -     48° C      Fuel cutoff not active      Rough road not			Check for an engine mechanical fault with a cylinder compression test. Carbon
oses, in part or in whole, is not below.	ke duniese autrorised	oy Volkswagen AG. Vol	• IAT > - 48° C • ECT @ start > - 48° C • Fuel cutoff not active  Swa Rough road not detected snot guaran	ecoracceptant liability with	wh respect to the correctnes	buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.
aze of commercial purp			DA negswayou AG.	"On in this co	ss of informati.	Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
	JURIANO JURIAN	Protected by co	. DA nagawaylo V Vding	MqoO jilgay		C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
						- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking",



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage misfire rate (MR) > 3.4 – 20.3% treduction (CBTA)  Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)		• 200 rev • Multiple	Immediately	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P0321 Ignition/ Distributor Engine Speed Input Circuit Rang e/ Performanc e	RPM Sensor Rationality Check	Counted teeth vs. reference incorrect  Or  Monitoring reference gap failure	Editological do Algingdo Valorio	• 2.0 s • Multiple	• 5 DCA	- Check the Engine Speed Sensor - G28 Refer to  E3.6.9 ngine Speed Sensor G28. Checking", page 686 .  - Check the Camshaft Position Sensor - G40 Refer to  ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674 .
P0322 Ignition/ Distributor Engine Speed Input Circuit No Signal	RPM Sensor Signal Activity Check	<ul> <li>Camshaft signals &gt; 5.0 [-]</li> <li>And</li> <li>Engine speed no signal</li> </ul>		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sensor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686.  - Check the Camshaft Position Sensor -G40 Refer to  ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Knock Control Internal Hardware Check	Signal fault counter (combustion) > 30.0 [-]  Signal fault counter (measuring window) > 2.0 [-]	Engine speed > 2,000 RPM	• Continuous	• 2 DCY	- Check the Knock Sensor 1 -G61 Refer to  K3.6.16 nock Sensor 1 G61, Checking". page 700.  - Check the Knock Sensor 2 -G66 Refer to  K3.6.17 nock Sensor 2 G66, Checking", page 702.
Knock / Com- bus- tion Vibra- tion Sen- sor 1	Knock Sen- sor Short To Ground Port A Knock Sen- sor Short To Ground Port B Knock Sen- sor Signal Range Check	threshold < - 0.70 V  Lower threshold < 1.4 – 5.6 V	• Engine speed > 1,000 RPM  • Engine speed > 2,000 RPM • ECT > 41° C • Engine load > 30.0 – 33.8%	∙o∀ Multiple	QHQHADO TUBURODS	Check the Knock Sensor 1 -G61 Refer to  K3.6.16 nock Sensor 1 G61, Checking", page T00  Check the Knock Sensor 2 -G66 Refer to  K3.6.17 nock Sensor 2 G66, Checking", page T02  Check the Knock Sensor 2 -G66 Refer to
	Knock Sensor Short To Battery Plus Port A Knock Sensor Short To Battery Plus Port B	Upper threshold > 1.0 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sensor 1 -G61 Refer to
sor 1 Circuit High Bank 1 or Single Sen- sor	Knock Sen- sor Signal Range Check	• Upper threshold > 23.0 – 92.0 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	<ul><li>0.5 s</li><li>Multiple</li></ul>		700.  - Check the Knock Sensor 2 -G66 Refer to  ⇒ K3.6.17 nock Sensor 2 G66, Checking", page 702.



	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Knock /	Knock Sensor Short To Ground Port A Knock Sensor	• Lower threshold < - 0.70 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	<ul><li>Check the Knock Sen- sor 2 -G66 Refer to</li></ul>
	tion Vibra- tion Sen-	sor Short To Ground Port B					K3.6.17 noc k Sensor 2 G66, Check- ing", page
	sor 2	Knock Sen- sor Signal Range Check	<ul><li>Lower threshold &lt; 1.4 – 5.6 V</li></ul>	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	• 0.5 s • Multiple		702 .
	Knock	Knock Sen- sor Short To Battery Plus Port A	threshold >	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to
				G does not guaranteeor			₹3.6.17 noc k Sensor 2 G66, Check- ing", page
Of DOFFNIE.		Knock Sensor Signal Range Check	<ul><li>Upper threshold &gt; 23.0 – 92.0</li><li>V</li></ul>	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> </ul>	• 0.5 s Multiple		<u>702</u> .
ole, is ne				• Engine load > 30.0 – 33.8%	with rest		
or commercial purposes, in part or in whole, is hot be the standard of commercial purposes, in part or in whole, is hot belong the standard of	P0341 Cam- shaft Posi- tion Sen- sor "A" Circuit Rang e/	Phase Sensor 1 Rationality Check	tern incor-		0.5 s     Continu-	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to  ⇒ C3.6.3 am- shaft Posi- tion Sensor G40, Check- ing" page
20 to 9/8/1/2	Bank 1 or	JUBILA doo Aq paysa	gord . 5A.	OPWENNED VOIKEWAGE	"Tinthis Go		ing", page 674.  - Check the Engine Speed Sen- sor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sen- sor G28, Checking", page 686.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0342 Cam- shaft Posi- tion Sen- sor "A" Circuit Low Bank 1 or Single Sen-	Phase Sensor 1 Rationality Check	<ul> <li>Signal voltage permanently low</li> <li>Crankshaft signal 8.0 [-]</li> </ul>		0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to
sor						<ul> <li>Check the Engine</li> <li>Speed Sensor -G28</li> <li>Refer to</li> </ul>
			<sub>wagen</sub> AG. Volkswagen AG	No.		E3.6.9 ngine Speed Sen- sor G28, Checking", page 686
P0343 Cam- shaft Posi- tion Sen- sor "A" Circuit High Bank 1 or Single Sen-	Phase Sensor 1 Rationality Check	age perma- nently high  Crankshaft		• Continue ous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to
sor	noith or recommercial purposes, in part or				ne correctness of information in this approximation of the polymer of the correctness of	<ul> <li>Check the Engine Speed Sensor -G28 Refer to</li> </ul>
	pate or commerci				formation in this	E3.6.9 ngine Speed Sen- sor G28, Checking", page 686.
P0351 Igni- tion Coil "A" Pri-	Ignition Coils Open Circuit	Signal current -0.25 – 2.0 mA Or Houndon Applications of the check failed	• Engine speed > 680 RPM	O.5 s Continuous Ous  AGAMSHO AGAMSH  CONTRACT  CONTRAC	• 2 DCY	Ignition Coils with Power Output Stage. Refer to
mary Con- trol Cir- cuit/ Open		check failed	.2A no			⇒ I3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696



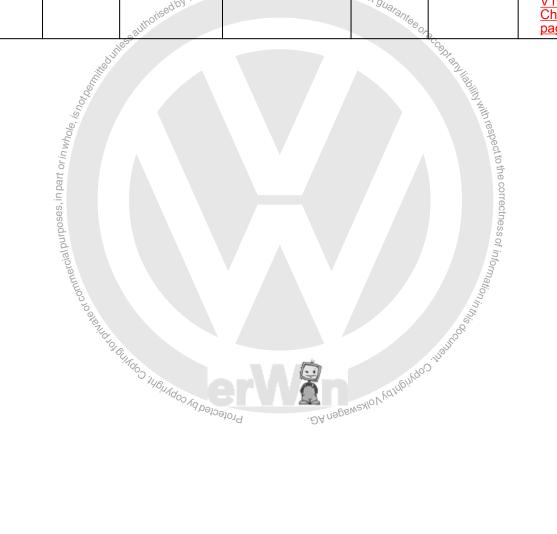
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0352 Ignition Coil "B" Primary Control Circuit/ Open	Čoils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P0353 Ignition Coil "C" Primary Control Circuit/ Open	Ignition Coils Open Circuit	Signal current -0.25 – -2.0 mA and an AG  Internal check failed	Engine speed > 680 RPM  Volkswagen AG does not gu	• 0.5 s • Continuous	lity with res	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
Ignition Coil "D" Pri- marry Con- trot Ciri Cuit/ Open	) to alter	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	Continuous	CC Controlling the correctness of information in this	- Check the Ignition Coils with Power Output Stage. Refer to    3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P0355 Igni- tion Coil "E" Pri- mary Con- trol Cir- cuit/ Open	Ignition Coils Open Circuit	Signal current -0.25 – -2.0 mA  Or Internal check failed	• Engine speed > 680 RPM	• 0.5 s grad	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0410 AIR Sys- tem "A"	Air System Check After SAI	Deviation SAI pressure > 50.0 hPa	<ul> <li>Delta engine load -10.0 – 10.0%/rev</li> <li>ECT 5 – 108° C</li> <li>IAT 5 – 100° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>SAI pressure sensor ready</li> </ul>	• 6.0 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 eco ndary Air Injection Sensor 1 G609. Checking". page 721.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101. Checking". page 719.
P0413 AIR Sys- tem Switc hing Valve "A" Circuit Open	Air Valve Open Cir- cuit	• Signal volt- age 9.25 – 11.25 V	Air valve commanded off     Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	Secondary Air Injection Solenoid Valve - N112 Refer to  S3.6.26 eco ndary Air Injection Sole- noid Valve N112, Checking", page 723.
P0414 AIR System Switc hing Valve "A" Circuit Shorted	Air Valve Short To Ground	• Signal volt- age < 6.0 V	Air valve commanded off     Engine speed > 80 RPM     Air valve commanded off     Engine speed > 80 RPM     Air valve commanded off     Indianal commanded of the commanded off     Indianal commanded of the commanded off     Indianal commanded of the commanded off     Indianal commanded	• 0.5 s • Continuous	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to  S3.6.26 eco 6 eco 6 eco 10 dary Air Injection Solenoid Valve N112,



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Air Valve Short To Battery Plus	• Signal cur- rent 2.20 – 4.20 A	<ul> <li>Air valve com- manded on</li> <li>Engine speed &gt; 80 RPM</li> </ul>			Checking", page 723 .
P0418 AIR System Control "A" Circuit	Air Pump Relay Open Circuit	5.50 V	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Cata- lyst Sys- tem Effi-	Catalyst System Measure Of OSC Compared To OSC Compared To OSC Of Borderline Catalyst	Measured OSC / OSC of borderline catalyst measured OSC (HC and NOx-correlated) 1.0 [-]  Religious authorities aut	<ul> <li>Time after engine start &gt; 343.0 s</li> <li>Or</li> <li>Time after dew point &gt; 343.0 s</li> <li>Delta exhaust mass flow &lt; 25.0 kg/h</li> <li>Exhaust gas mass flow, lower range 25.0 - 130.0 kg/h (CBUA)</li> <li>Exhaust gas mass flow, lower range 25.0 - 120.0 kg/h (CBTA)</li> <li>Exhaust gas mass flow, upper range n.a.</li> <li>Modeled exhaust gas temp. dynamic &lt; 50 K</li> <li>Modeled exhaust gas temp. in catalyst system, lower range 500 - 860° C (CBUA)</li> <li>Modeled exhaust gas temp. in catalyst system, lower range 560° - 860° C (CBTA)</li> <li>Modeled exhaust gas temp. in catalyst system, upper range n.a.</li> <li>Minimum modeled exhaust gas temp. in catalyst system &gt; 400° C</li> <li>For time &gt; 120.0 s</li> <li>Filtered minimum modeled exhaust gas temp. in catalyst system &gt; 400° C</li> <li>For time &gt; 120.0 s</li> <li>Filtered minimum modeled exhaust gas temp. in catalyst system &gt; 450° C</li> <li>Engine load 12.8 - 65.3% (CBUA)</li> <li>Engine load 12.8 - 60.0% (CBTA)</li> </ul>	40.0 s (CBUA)     30.0 s (CBTA)     Once / DCY     Oes not guarantee     Market M	• 2 DCY  • 2 DCY  • 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Checking", page 713 .  - Check the Center Oxy-gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to ⇒ O3.6.23 xy-gen Sensor 1 Before Catalytic Converter - GX10 Refer to ⇒ Catalytic Converter (TWC). Checking", page 716 .  - Check the Three Way Catalytic Converter (TWC). Refer to ⇒ T3.6.27 hree Way Catalytic Converter (TWC). Refer to



Scrip- tion  Threshold Value  Evap purge load-  Ryph  Range between lambda set value and lambda value < 0.02 [-]  Out of lambda control closed loop  Lambda control not at min or max limit  Number of checks 3.0 [-]  Outs front ready  Outs front re	DTC / Monitor De- Strategy scrip- Description Threshold Val-	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
driving cycle ready	al purposes, in part or in whole, is not be milling the state of the s	Evap purge loading not high     Engine speed 1,200 – 3,320 RPM     Range between lambda set value and lambda value < 0.02 [-]     Out of lambda range < 2.0 s     Lambda control closed loop     Lambda control not at min or max limit     Number of checks 3.0 [-]     O2S front ready     O2S rear ready     SAS not active     No misfire     O2S front response monitoring in current driving cycle ready	Gen AG does not	And the Constant of the state o	with respect to the correctness of information in the



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	tional Check	<ul> <li>Deviation lambda control &lt; 9.0%</li> <li>And</li> <li>Deviation idle control &lt; 40.0%</li> </ul>	<ul> <li>Time after engine start n.a.</li> <li>Engine speed idle</li> <li>Engine speed deviation &lt; 100 RPM</li> <li>ECT &gt; 60° C</li> <li>Or</li> <li>Substitute ECT &gt; 80° C</li> <li>IAT &gt; 5° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>Lambda control closed loop</li> </ul>	• 20.0 s • Once / DCY	• 2 DCY	- Check the EVAP System for Leaks. Refer to ⇒ \$2.2.4 ystem, Checking For Leaks", page 7.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80. Checking", page 688.
		Copyring to the purposes, in part or in whole, is not being the purposes, in part or in whole, is not being the purposes.	orised by Volkswagen AG. Vol			- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6. 19 eak Detection Pump V144, Checking (4 Pin), page
		TO SPECIFICACION OF THE PROPERTY OF THE PROPER	Protected by copyright.	Nagen AG.	SANO VOINGON VOIKE	TO THE COLUMN TH



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0442 EVAP Sys- tem	EVAP System Small Leak Pressure Check	Time for pressure drop < 1.9 s	• Time after engine start 12.0 – 1,200.0 s	• 180.0 s • Once / DCY	• 2 DCY	Check the     EVAP Sys- tem for Leaks. Refer
Leak De- tected (Small			• Preceding engine shut-off time > 21,600.0 s			to ⇒ S2.2.4 ys- tem, Check- ing For
Leak)			<ul> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 –</li> </ul>			<del></del>
			• Air temperature 5 • Air temperature 5 • Air temperature	/olkswagenAG <sub>C</sub>	oes not guarantes or a	<ul><li>Check the EVAP Can-ister Purge</li></ul>
		, kedune se	<ul> <li>Air temperature drop after engine start &lt; 5 K</li> <li>Intake manifold vacuum &gt; -2,560.0 hPa</li> <li>Altitude &lt; 2,700.0 m</li> <li>Vehicle speed &gt;= 0 km/h</li> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Restart temperature difference &gt; 52 K</li> <li>Evap purge valve closed</li> <li>LDP active</li> <li>Deep down hill driving</li> <li>Delta ambient pressure &lt; 7.03 hPa</li> </ul>		° Oral	Regulator Valve 1 - N80 Refer
		is not porm	Intake manifold vacuum >     -2,560.0 hPa			E3.6.10 VAP Canister Purge Regu-
		n whole,	• Altitude < 2,700.0 m			lator Valve 1 N80, Check-
		part ori	<ul> <li>Vehicle speed &gt;= 0 km/h</li> </ul>			ing", page 688
		oses, in	Vehicle speed ones > 30 km/h			Check the     Leak Detection Pump -
		cial purk	Selected gear any drive			V144 Refer to
		or comme	<ul> <li>Restart tempera- ture difference &gt; 52 K</li> </ul>			± L3.6 ∄8 eak Detection Pump V144,
		TENIH TOPE	Evap purge valve closed			Checking (3 Pin)", page 704
		CHA	LDP active		Coby	Check the
			Deep down hill driving	1	Copyright by Volkswa	Leak Detec- tion Pump -
			Delta ambient pressure < 7.03 hPa	.ĐA nər		V144 Refer to ⇒ L3.6.19 eak
			• Or			Detection Pump V144,
			• Engine load not < 19.5 – 45.0%			Checking (4 Pin)", page 706.
			• And			<u>700</u> .
			Delta vehicle speed not > -1 km/h			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
	EVAP Purge Valve Open Circuit	• Signal volt- age > 4.40 – 5.40 V	EVAP purge valve commanded off     Engine speed > 80 RPM      Republic of the speed in the	0.5 s     Continuous	• 2 DCY	- Check the EVAP Can- ister Purge Regulator Valve 1 - N80 Refer to	
Circuit Open			ikedundes authorised	by Volkswagen A	G. Volkswagen AG	Canister Canister Purge Regulator Valve 1 N80, Checking", page 688  Check the	Or and
			art or in whole, is not been,			Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144,	ability with respect to the c
			sommercial purposes, in p			Checking (3 Pin)", page 704.  - Check the Leak Detec- tion Pump - V144 Refer	and liability with respect to the correctness of information in this occur.
			TO BROWN ON WOM	700 <sub>190000</sub>		L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706	In this cock



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0455 EVAP Sys- tem	EVAP System Large Leak Pressure Check	• Time for pressure drop < 0.95	Time after engine start 12.0 – 1,200.0 s  Preceding engine shut-off time > 21,600.0 s  ECT 5 – 105° C  ECT @ start 5 – 105° C  Air temperature 5 – 95° C  Air temperature drop after engine start < 8 K  Intake manifold vacuum > -2,560.0 hPa  Altitude < 2,700.0 m  Vehicle speed >= 0 km/h  Vehicle speed ones > 30 km/h  Selected gear any drive  Restart temperature difference > 52 K  Evap purge valve closed  LDP active	• Once Interpretation	• 2 DCY	<ul><li>Check the EVAP Sys- tem for Leaks. Refer</li></ul>
Leak De- tected		Sunes	gine shut-off time > 21,600.0 s		Copt day light	to ⇒ S2.2.4 ys- tem, Check- ing For
Large Leak	isnotbe		• ECT 5 – 105° C • ECT @ start 5 –		Jility With	Leaks", page 7.
	in whole,		Air temperature 5		espectto	- Check the EVAP Can-
	ses, in part or	pressure of the pressure of th	Air temperature drop after engine start < 8 K		the correction	ister Purge Regulator Valve 1 - N80 Refer to
	ercial purpo		• Intake manifold vacuum > -2,560.0 hPa		ess of inforn	⇒ E3.6.10 VAP Canister Purge Regu-
	Sorcomin		• Altitude < 2,700.0 m		lation in t	lator Valve 1 N80, Check- ing", page
	*671.H.		• Vehicle speed >= 0 km/h		Child Sin	688 .
		Olindos inginados vans	<ul> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> </ul>	Wangiy	900 . - 17100	Leak Detection Pump - V144 Referto
		126	Restart tempera- ture difference > 52 K	gewa		⇒ L3.6.18 eak Detection Pump V144,
			Evap purge valve closed			Checking (3 Pin)", page 704
			<ul><li>LDP active</li><li>Deep down hill</li></ul>			<ul> <li>Check the</li> </ul>
			driving			Leak Detec- tion Pump - V144 Refer
			<ul> <li>Delta ambient pressure &lt; 7.03 hPa</li> </ul>			to ⇒ L3.6.19 eak
			• Or			Detection Pump V144,
			• Engine load not < 19.5 – 45.0%			Checking (4 Pin)", page 706.
			And     Delta vahiole			
			Delta vehicle speed not >= -1 km/h			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	EVAP System Very Small Leak Pressure	• Time for pressure drop < 5.8 s	Time after engine start 12.0 – 1,200.0 s	• 180.0 s • Once / DCY	• 2 DCY	- Check the EVAP Sys- tem for Leaks. Refer
Leak De- tected	Check		gine shut-off time > 21,600.0 s			to ⇒ S2.2.4 ys- tem, Check-
Small			• ECT 5 – 105° C			<u>ing For</u> Leaks", page
Leak)			• ECT @ start 5 – 105° C			7.  - Check the
	-4/	y Volkswagen AG. Voll	- 95° Ces <sub>not</sub>			EVAP Can- ister Purge Regulator
	inless authorisees		Air temperature of the drop after engine start < 3 K	<sup>RC</sup> O <sub>F</sub> accept		Valve 1 - N80 Refer to
N DOFFILL			Intake manifold vacuum >     -2,560.0 hPa	AM Rigoliti		<u>⇒</u> E3.6.10 VAP Canister Purge Regu-
ole, is no			• Altitude < 2,700.0 m	Allin	) Jean	lator Valve 1 N80, Check-
oart orin wh			<ul> <li>Vehicle speed 0         <ul> <li>140 od. &gt;= 0</li> <li>km/h</li> </ul> </li> </ul>		pect to the co	ing", page 688 . - Check the
ses, in			Vehicle speed ones > 30 km/h		orrectne	Leak Detec- tion Pump - V144 Refer
alpurpo			Selected gear any drive		ss of in	to ⇒
or commerci			gine start 12.0 – 1,200.0 s  Preceding engine shut-off time > 21,600.0 s  ECT 5 – 105° C  ECT @ start 5 – 105° C  Air temperature 5 – 95° C  Air temperature arrow drop after engine start < 3 K  Intake manifold vacuum > -2,560.0 hPa  Altitude < 2,700.0 m  Vehicle speed 0 – 140 od. >= 0 km/h  Vehicle speed ones > 30 km/h  Selected gear any drive  Restart temperature difference > 52 K  Evap purge valve closed  LDP active	Se Or accede and lightling with the contract of the contract o	ormas.	L3.6.18 eak Detection Pump V144, Checking (3
0,0/1	10,40		Evap purge valve closed	inoda		<u>Pin)", page</u> <u>704</u>
	* OUIA do	73.0		\sqrt{0}		Check the     Leak Detec-
	346146	Jary	• Hill driving	Voc		tion Pump - V144 Refer
	O JUGINO	Protected by	Hill driving     Delta ambient pressure -8.0 – 2.0 hPa			to ⇒ <u>L3.6.19 eak</u>
			• Or			Detection
			• Engine load not < 19.5 – 45.0%			Pump V144, Checking (4 Pin)", page
			• And			<u>706</u> .
			Delta vehicle speed not >= -1 km/h			
			Additional:			
			Vehicle accelera- tion < 3.80 m/s2			
			Delta engine load < 767.98%/seg			



			Yo.			200
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0458 EVAP Sys- tem Purge Con- trol Valve "A" Circuit Low		Signal volt- age < 2.15 3.25 V  secondary of the distribution of	valve commanded off  • Engine speed >	• 0.5 s • Continuous	• 2 DCY	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688
P0459 EVAP Sys- tem Purge Con- trol Valve "A" Circuit High	Purge Valve Short To Battery	• Signal current > 2.2 A	EVAP purge valve commanded on Engine speed > 80 RPM	• 0.5 s • Continuous	• 5 DCA	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0491 AIR Sys- tem Insuf- ficient Flow Bank 1	Air System Flow Check During Catalyst Heating	SAI pressure measured with SAI pressure sensor vs. modeled < 50.0 – 72.0%  Or Absolute deviation of raw pressure signal from filtered signal: mean value < 1.5 – 9.0 hPa	- 120.0 kg/h  • Delta engine load -10.0 - 10.0%/rev  • ECT 5 - 108° C  • IAT 5 - 100° C  • Altitude Volkswage Volkswage Sensor ready			Injection Pump Motor V101 Re- Fer to S3.6.24 eco Indary Air In- Injection Pump Relay J299 / Secondary Air Injection Pump Motor V1004
P0501 Vehi- cle Speed Sen- sor "A" Circuit Rang e/ Per- for- manc e	Vehicle Speed Plausibility Check	Vehicle Speed < 6 km/h	Engine speed > 2,800 RPM     Engine torque > 120.0 Nm     Vehicle speed sensor no fault	• Multiple • Multiple	• 2 DCY of the state of the sta	- Check the vehicle speed signal. Refer to



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0506 Idle Con- trol Sys- tem RPM - Lower Than Ex- pec- ted	Idle Controller Out Of Range Low	Engine speed deviation < -100 RPM     And     RPM controller torque value ≯= calculated max value.      The controller torque value ≯= calculated max value.	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0</li> <li>Vehicle speed 0</li> <li>km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> <li>For manual transmission:</li> <li>Engine load &lt; 34.5%</li> </ul>			threspect to the correctness of informa
P0507 Idle Con- trol Sys- tem RPM - High- er Than Ex- pec- ted	Idle Con- troller Out Of Range High	<ul> <li>Engine speed deviation &gt; 100 RPM</li> <li>And</li> <li>RPM controller torque value &lt;= calculated min. value</li> <li>Or</li> <li>RPM controller P-portion and I-portion &lt; -20.0 Nm</li> </ul>	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> </ul>	Multiple     Multiple	· 2 DCY	Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P050 A Cold Start Idle Con- trol Sys- tem Per- for- manc e	Cold Start Monitoring Idle Con- troller Out of Range Low	<ul> <li>Engine speed deviation &lt; -100 RPM</li> <li>And</li> <li>RPM controller torque value &gt;= calculated max. value</li> </ul>	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT @ start &lt; 143° C</li> <li>IAT &gt; -48° C</li> <li>EVAP purge valve closed</li> <li>External torque request not demanded</li> <li>Catalyst heating active</li> <li>For manual transmission:</li> <li>Engine load &lt; 34.5%</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
	inle	Engine speed deviage tion > 100 RPM  RPM controller torque value <= calculated min. value      RPM controller P-portion and I-portion < -20.0 Nm  RPM controller P-portion and I-portion < -20.0 Nm	Engine speed idle     Vehicle speed 0	not guarantee or ac	on the correctness of information in this order.	
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P052 A Cold Start "A" Cam- shaft Posi- tion Tim- ing Over- Ad- vance d Bank 1	Cold Start Monitoring VVT Actua- tor Intake Target Er- ror	Difference between target position vs. actual position > 10° CRK      Difference	Time after engine start >= 10.0 s  Engine speed >= 400 RPM  Modeled oil temperature >= -48° C  Catalyst heating active  Time after en-	• 5.0 s • Once / DCY	• 2 DCY	- Check engine oil for incorrect viscosity or in need of servicing (dirty oil). Oil that is not clear in color may be causing the sensor to operate incorrectly. The engine oil must be clean and of the correct viscosity in order for the sensor to operate properly. Check the vehicle paperwork to determine what oil viscosity has been used and when the last oil change was performed. Change the engine oil if necessary.  Check the Camshaft Adjustment Valve 1 - N205 Refer to  C3.6.2 amshaft Adjustment Valve 1 N205. Checking", page 672.  Replace the	ithrespect to the correctness of information
ECM/ PCM Pro- ces- sor	Sensors Heater Front Out Of Range	between measured calibration resistance in ECM and set value > 45.0	gine start > 40.0 s • Engine speed	Multiple		Engine/ Motor Con- trol Module - J623 Refer to appropri- ate repair manual.	
	Altitude Sensor Plausibility Check	Signal gradi- ent > 50.0 hPa		<ul><li>20.0 s</li><li>Multiple</li></ul>			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		• Signal gradi- ent < -50.0 hPa				
	Altitude Sensor Short To Ground	• Signal volt- age < 0.20 V		• 0.2 s • Multiple		
	Altitude Sensor Short To Battery / Open Cir- cuit	• Signal volt- age > 4.88 V	uthorised by Volkswagen AG. 1	rolkswagen AG <sub>Q</sub>	oes not guarantee or a	C <sub>B</sub> D <sub>f</sub>
	ECM: WDA Function Monitoring:	General cause failure		<ul><li>0.5 s</li><li>Continu-</li></ul>		MA libbility
	WDA	Internal check failure		ous		Withresper
		Qvervoltage     detection     failure				ct to the corr
	ECM: EE- PROM Check	Check failed  Sodund				ectness of
	ECM: Self Check For Sensor IC internal Hardware Check (Electrical Adjustment Communi- cation, Volt- age Sup-	• Check	inorised by Volkewagen AG. I		A AGRUGIU ADO	information in this oo, the state of the sta
	ply) ECM: 5V Supply Voltage Internal Hardware Check	Under-/ overvoltage detection	ProtedbajoajonA	.ĐA nəç	NO <sub>IK</sub> ZMS	
	ECM: A/D Converter Power-Up Calibration	Check failed	Initialization     phase active			
	ECM: A/D Converter Adc-Cannel Conversion		<ul><li>Initialization phase active</li><li>Power-up calibration executed</li></ul>			
	ECM: EGAS Module Function Monitoring: A/D Con- verter	Comparison reference voltage with sensor volt- age incorrect				



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
		Test voltage check failed      Internal check failed					
	ECM: EGAS Module Function Monitoring: Torque	Comparison with allowed engine tor- que incorrect			Volkewaga		
	ECM: EGAS Module Function Monitoring: Engine Speed De- viation	Difference between cal- culated and internal en- gine speed > 320 RPM	Internal engine speed > 520 RPM  RPM  Internal balances, in part or in who of internal part of internal	Volkswagen AG	veikewagen AG do	es not guarantee or accepte	and liability
	ECM: EGAS Module Function Monitoring: Coding	Internal check failed	t or in whole, is not				Nwith respect to the
	ECM: EGAS Module Function Monitoring: Ignition Timing		rerdial purposes, in pa				correctness of inform
	ECM: EGAS Module Function Monitoring: Intern	System re- action incor- rect	TIMO PO SIGNIFICATION OF THE STATE OF COMME			jugus	ation in this do
	ECM: EGAS Module Function Monitoring: Injection Rate Limi- tation		JUBJUAC JUBJUAC	Protected by	-SA nega	weaho Vedriffingo Volksw	
	ECM: EGAS Module Function Monitoring: Accelerator Position	Internal check failed					



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	ECM: EGAS Module Monitoring Module	<ul> <li>Function controller check failed</li> <li>And</li> <li>Monitoring module check no failure</li> </ul>	SPI - interface no failure			
	CAN: Internal Fault CAN Controller RAM Check	RAM error memory checksum error	<ul> <li>Initialization phase</li> <li>Time after ignition on 500.0 ms</li> </ul>	• 0.0 ms • Once / DCY		
	Relay Open Circuit  Fuel Pump Relay Short To Ground		Pump relay commanded off  swagen gine speed > 80 RPM  80 RPM	0.5 s     Continuous  Oracoptantibility  The state of the state o	spe	- Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690.
F0629 Fuel Pump "A"	Fuel Pump Relay Short To Battery Plus	• Signal current 0.60 – 1.20 A	Pump relay commanded on     Engine speed > 80 RPM	• 0.5 s • Continuous	othe correctne	- Check the Fuel Delivery Unit - GX1-/Fuel Pump Relay -J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1/Fuel Pump Relay J17, Checking", page 690.
	Stando Hollyd	Protected by co	. DA negswexlo V Vo Mai	MODIN		



	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Throt- tle Ac- tuator Con- trol Rang e/ Per- for- manc e Bank 1	Throttle Actuator Basic Settings Rationality Check Close Movement  Throttle Actuator Basic Settings Signal Range Check @		<ul> <li>Engine speed 0 RPM</li> <li>Vehicle speed 0 km/h</li> </ul>	• 5.0 s • Multiple  • 0.3 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338. Checking". page 726 .
, cial purposes, in part or in whe,	or commerce.	Mechanical Stop Low	<ul> <li>TPS 2 signal voltage not (4.20 – 4.60)</li> <li>Or</li> <li>TPS1 + TPS2 not (4.82 – 5.18)</li> </ul>	<ul> <li>Case 1:</li> <li>Ignition on</li> <li>ECT -20 - 115° C</li> <li>IAT -20 - 143° C</li> <li>Case 2:</li> <li>Engine shut-off-time 3.0 s</li> <li>ECT 5 - 115° C</li> <li>IAT 5 - 143° C</li> </ul>	Multiple     Many liability with respect to the spectrol of the spectrol	athe correctness	
	P0641 Sen- sor Refer-	ECM: Sen- sor Refer- ence Circuit A Signal Range Check	V	. DA nagen AG.	• 0.5 s	• 2 DCY	<ul> <li>If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.</li> </ul>

## Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07,2022

		Holkswager	Tid does not		•	
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sen- sor Refer-	ECM: Sensor Reference Circuit B Signal Range Check	Signal volt- age devia- tion > +/- 0.3 V		O.5 s     Continuous	2 DCY 2 manual threspect to the correctness of information,	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.
Sen-	ECM: Sen- sor Refer- ence Circuit C Signal Range Check	• Signal voltage deviation > +/- 0.3 V	-DA nagewaylo V var	O.5 s     Continu- ous,   Output  Output	• 2 DCY	<ul> <li>If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P117 A Bank 1, Oxy- gen Sen- sor Cor- rec- tion Cen- ter Sen- sor Con- trol Limit Reach ed	Fuel System Out Of Range	• I - portion of 3rd lambda control loop > 0.03 [-]	<ul> <li>Engine speed 1,400 – 3,600 RPM</li> <li>Modeled exhaust gas temp 350 – 1,000° C</li> <li>Engine load 20.3 – 54.8%</li> <li>Lambda control closed loop</li> <li>2nd lambda control closed loop</li> <li>3rd lambda control closed loop</li> <li>O2S rear ready</li> <li>Electrical check ready</li> <li>O2S heater rear ready no fault</li> </ul>		John do Singa do Sing	Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.  Check the Oxygen
P150 A En- gine Off Timer Per- for- manc e	Engine-Off- Time Com- parison Of Engine Off Time From Instrument Cluster Control Unit With En- gine After Run Time	Difference between engine-off-time and ECM after-run time < -12.0 s	<ul> <li>Key on after ECM after run time active</li> <li>CAN active</li> </ul>	• 6.0 s • Once / DCY	• 2 DCY	<ul> <li>If ignition off B+ is lost to ECM, this code will set. Check pow- er and ground in- puts to ECM first. Refer to Wiring Dia- grams for pin loca- tions. If all power/ grounds to ECM are</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Difference between en- gine-off-time and ECM af- ter-run time > 12.0 s	Key on during ECM after run time active     CAN active			present, re- place the Engine/ Motor Con- trol Module - J623 Refer to appropri- ate repair manual.
P2088 "A" Cam- shaft Posi- tion Actua- tor Con- trol Circuit Low Bank 1	VVT Actua- tor Intake Short To Ground	• Signal volt- age < 2.15 – 3.25 V	<ul> <li>Camshaft valve off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to
	illi diness d	<sub>ithorise</sub> d by Volkswagen	AG. Volkswagen AG does no	* 9uarante or accept	and the state of t	Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672.
shaft Posi- tion Actual tor Con- trol	tor Intake Short To Battery Plus	• Signal cur- rent > 2.2 A	<ul> <li>Camshaft valve on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	C Dimrespect to the correctness of inform	- Check the Camshaft Position Sensor - G40 Refer to  ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.
	smooto atenido do directo	Protected by copyright.	J. A negs we will be a second of the second	MAHQHAOO HAY	$\mathbf{Y}_{\mathrm{DM}}^{\mathrm{N}}$ respect to the correctness of $\ln torm_{\mathrm{A}} tion_{in}$ this $\sigma_{\mathrm{QQ}_{\mathrm{U}}}$	- Check the Camshaft Adjustment Valve 1 - N205 Refer to ⇒ C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672 .



P2096   Fuel Sys-Post   Post Catalytic Control loop
10/10



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Post Catalyst Fuel Trim System Too Rich Bank 1	ess authorised by		Modeled exhaust gas temp. 400 – 1,000° C  Exhaust gas mass flow 18.0 – 180.0 kg/h  Lambda control closed loop  General Lambda control not at min or max limit  2nd lambda control rol closed loop  O2S front ready  O2S rear ready  O2S heater front active  Puel cut off not active  Catalyst heating not active  SAI not active  SAI not active	140.0 s     Multiple  Acceptantiability with respect to the services of Information in this coordinates are the services are		<ul> <li>Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in</li></ul>
Throt- tle Ac- tuator "A" Con- trol	tuator Ra- tionality Check	Deviation throttle value angles vs calculated value > 4.0 – 50.0%		<ul><li>0.5 s</li><li>Multiple</li></ul>	• 2 DCY	<ul> <li>Check the Throttle</li> <li>Valve Control Module - GX3 / J338</li> <li>Refer to</li> </ul>
Motor	Throttle Actuator Signal Range Check	<ul> <li>Duty cycle &gt; 80.0%</li> <li>And</li> <li>ECM power stage no failure</li> </ul>		<ul><li>5.0 s</li><li>Multiple</li></ul>		T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.



			- AG Volkey	AUGO 4 -		
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- guaranteeor	Component Diagnostic Procedure
	or in w.b.	check	<ul> <li>Duty cycle &gt; 80.0%</li> <li>Or</li> <li>Deviation throttle value angle vs. calculated value &gt; 4.0 - 50.0%</li> </ul>	• 12.0 s • Multiple	• 2 DCY Sprand	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  13.6.28 hrottle Valve Control Mod-
Limi- ted Power	Throttle Activator tuator Functional Check	Internal check failed				ule GX3 / J338, Checking",
	Throttle Actuator Temperature / Current Monitoring	commercia				20 20 20 20 20 20 20 20 20 20 20 20 20 2
	Throttle Actuator Short To Battery Plus / Short To Ground	• SInternal check			·ilalinoo	
	Accelerator Position Sensor 1 Out Of Range Low	■ Signal volt/	Protected by cop	0.5 s • Continu <sup>©</sup> • ous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to    → A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.
P2123 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "D" Circuit High	Accelerator Position Sensor 1 Out Of Range High	Signal volt- age > 4.8 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670
P2127 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "E" Circuit Low	Accelerator Position Sensor 2 Out Of Range Low	• Signal volt- age < 0.3 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.



DTC / Monitor De- scrip- tion Strategy Description	Malfunction Criteria and Threshold Value	Secondary Parameters with Enable on A	Monitoring Length GooTime	MIL Illumina- tion	Component Diagnostic Procedure
P2128 Accelerator Throt- tle/ Pedal Sensor 2 Out Of Position Sensor/ Switc h "E" Circuit High	• Signal voltage > 2.4 V	Signal voltage	<ul><li>0.5 s</li><li>Continuous</li><li>0.5 s</li></ul>	• 2 DCY	ing", page
P2138 Accelerator Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "D"/"E " Volt- age Corre- lation	Signal voltage sensor 1 vs. 2 > 0.167 – 0.703 V	sensor 1 > 445.0	Continuous	wedo in this of the state of th	Check the Accelerator Pedal Module -GX2 Refer to  A3.6.1 ccelerator Pedal Module GX2, Checking", page 670



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2177 Sys- tem Too Lean	Fuel Sys- tem Too Lean @ Part Load	Adaptive val- ue > 28.0%	gine start n.a. • Engine speed 1,320 – 4,600	<ul><li>25.0 s</li><li>Multiple</li></ul>	• 2 DCY	Check the vacuum lines visually for leaks.
Off Idle Bank 1			<ul> <li>RPM</li> <li>Engine load 25.0 – 46.0%</li> <li>Mass air flow</li> </ul>			Check the intake sys-tem visually for leaks (false air).
			45.0 – 300.0 kg/h			- Check the
			<ul><li>ECT &gt; 59° C</li><li>Or</li></ul>			fuel pressure and delivery
			Substitute ECT n.a.			quantity. Re- fer to fuel system me- chanical
			<ul> <li>IAT &lt; 85° C</li> <li>Ratio manifold pressure to ambient pressure &gt; 0.20 [-]</li> </ul>			testing in ⇒ C3.1 heck", page 14 and/or to ap- propriate re-
			• Or			pair manual.
			<ul> <li>Valve overlap &lt; 40° CRK</li> </ul>			Check the     Fuel Injec-
			Lambda control closed loop	an AG	Volkswagen 40	tors. Refer to
			Evap purge valve closed	Volkswagerra	Volkswagen AG do	F3.6.13 uel Snolnjectors, Checking", page 694
			<ul> <li>If low fuel signal then wait until fuel consumption</li> </ul>			- Check the Oxygen Sensor 1 Before Cata-
			unpart or in whole, is not but but or in whole, is not but but but but but but but but but bu			lytic Converter - GX10 Refer to  303.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716  Check the Fuel Delivery Unit - GX1- / Fuel
			STOOL OF STANLEY OF ST	Jar	100	- Check the Fuel Delivery Unit - GX1- / Fuel Pump Relayy- J17 Refer to F3.6.11 uel Delivery Unit GX1 / Fuel
			•	Protected by	. ĐA nags	Delivery Unit GX1 / Fuel Pump Relay



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						J17, Check- ing", page 690 .  - Check the Intake Mani- fold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P2178 System Too Rich Off Idle Bank 1	Fuel System Too Rich @ Part Load	• Adaptive value < -28.0%	<ul> <li>Time after engine start n.a.</li> <li>Engine speed 1,320 – 4,600 RPM</li> <li>Engine load 25.0 – 46.0%</li> <li>Mass air flow 45.0 – 300.0 kg/h</li> <li>ECT &gt; 59° C</li> <li>Or</li> <li>Substitute ECT n.a.</li> <li>IAT &lt; 85° C</li> <li>Ratio manifold pressure to ambient pressure to ambient pressure &gt; 0.20 [-]</li> <li>Or</li> <li>Valve overlap &lt; 40° CRK</li> <li>Lambda control closed loop</li> <li>Evap purge valve closed</li> </ul>			- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in   C3.1 heck".  page 14  and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to F3.6.13 uel Injectors. Checking".  page 694  - Check the Oxygen Sensor 1  Before Catalytic Converter - GX10- Refer to GX10- Refer to GX10- Checking".  page 716  - Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay - J17- Refer to S7.6.11 uel Delivery Unit GX1 / Fuel Pump Relay - J17- Checking", page 690  - Check the Intake Manifold Sensor - GX9- Refer to S7.6.15 ntake	and liability with respect to a minormation in this obots.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						Manifold Sensor GX9, Checking", page 698
				wagen AG	.Volkswagen AG de	<ul> <li>Check the EVAP Can- ister Purge Regulator Valve 1 - N80 Refer to</li> </ul>
			Copyright of the season of the	Volkswag		N80 Refer to Solution States E3:6,10 VAP Canister Purge Regulator Valve 1 N80, Checking", page
			t orin whole, is no			Purge Regulator Valve 18 N80, Checking", page 688
			ial purposes, in pa			
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2181 Cooling System Performanc e	Coolant System Perform- ance Cool- ing System Perform- ance Not In A Expect Range	Thers_03:     Cooling system temperature to low after a sufficient air mass flow integral 75° C	<ul> <li>Thres_01:</li> <li>Begin of air mass integration when engine temp. 30° C</li> <li>Thers_02:</li> <li>ECT @ start -10 - 60° C</li> <li>AAT &gt; -10° C</li> <li>Fuel cut off not active</li> <li>And</li> <li>Engine load 14.0 - 95.0%</li> </ul>	<ul><li>2.0 s</li><li>Once / DCY</li></ul>	• 2 DCY	<ul> <li>Check the Engine Coolant Temperature Sensor -G62 Refer to</li> <li>E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683</li> <li>Check the Engine Coolant Temperature Sensor on Radiator</li> </ul>
		and the part of the part of the whole, is not being the part of the whole, is not being the part of th	CBUA)     Depending on temp. at engine start and min.		as not guarantee or acc	Outlet -G83 Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685  Check the engine cool- ant thermo- stat. Refer to appropriate repair man- ual.
		almos to alenith to fall kdo.	At time of fault decision:  Average air mass flow 35.0 – 280.0 kg/h  Average vehicle speed 30 – 120  May Arganage of the speed 30 – 120	sgen P.G.	WEMBY BY VOOR TO WENT BY VOIR SON	Mation in this court



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2184 Engine Coolant Temperature Sensor 2 Circuit Low	Fan Control Coolant Tempera- ture Sensor Short To Ground	140° C	ed by Volkswagen AG. Volks	<ul> <li>2.0 s</li> <li>Continuous</li> </ul>	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to  ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685
P2185 Engine Coolant Temperature Sensor 2 Circuit High		• ECT outlet < -40° Cs		• 2.0 s • Continuous	• 2 DCY <sub>aCCQDfall</sub>	- Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.
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Too nat Idle Bank 1    Mass air flow < 35.0 kg/h	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Catalytic Converter GX10, Checking", page 716.  Check the Fuel Delivery Unit - GX1- / Fuel Pump Rela -J17 Refer to   73.6.11 uel	De- scrip- tion P2187 Sys-	Strategy Description Fuel Sys- tem Too	teria and en A threshold Value  Adaptive value > 5.02%	<ul> <li>ters with Enable</li> <li>Conditions</li> <li>Conditions</li> <li>Conditions</li> <li>Conditions</li> <li>Conditions</li> <li>Formula and the present of the prese</li></ul>	• 40.0 s • Multiple	tion	- Check the vacuum lines visually for leaks Check the intake system visually for leaks (false air) Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors. Checking", page 694 Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to ⇒ C3.6.23 xy-gen Sensor 1 Before Catalytic Converter - GX10 Refer to ⇒ C1.23 xy-gen Sensor 1 Before Catalytic Converter GX10 Refer to C1.24 xy-gen Sensor 1 Before Catalytic Converter GX10 Refer to C2.25 xy-gen Sensor 1 Before Catalytic Converter C3.26 xy-gen Sensor 1 Before Catalytic Converter C3.27 xy-gen Sensor 1 Before Catalytic Converter C3.27 xy-gen Sensor 1 Before Catalytic Converter C3.27 xy-gen Sensor 1 Before C4.27 xy-gen Sensor 1 Before C5.27 xy-gen Sensor 1 Before C5.27 xy-gen Sensor 1 Before C5.27 xy-gen Sensor 1 Before C6.27 xy-gen Sensor 1 Before C7.27 xy-gen Sens
GX1 / Fuel							GX1 / Fuel Pump Relay



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						J17, Checking", page 690 .  - Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .

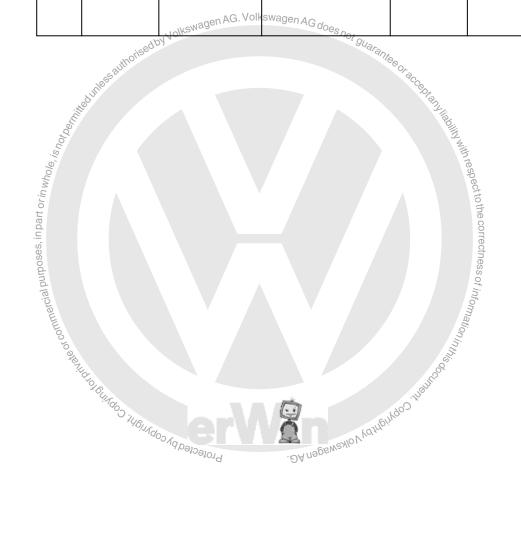




DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2188 Sys- tem Too Rich at Idle Bank 1	Fuel System Too Rich @ Idle	• Adaptive value < -5.02%	gine start n.a.  Engine speed < 860 RPM  Mass air flow < 35.0 kg/h  ECT > 59° C  Or  Substitute ECT n.a.	• 40.0 s • Multiple	• 2 DCY	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in   C3.1 heck", page 14 and/or to appropriate repair manual.
	mercial purposes, in part or in whole :	The state of the s	<ul> <li>IAT &lt; 85° C</li> <li>Ratio manifold pressure to ambient pressure &gt; 0.20 [-]</li> <li>Or</li> <li>Valve overlap &lt; 40° CRK</li> <li>Delta part load adaptation ready</li> <li>Lambda control closed loop</li> <li>Evap purge valve closed</li> <li>If low fuel signal then wait until was fuel consumption</li> </ul>			- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  303.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  - Check the Fuel Delivery Unit - GX1-/ Fuel Pump Relay J17 Refer to  F3.6.11 uel Delivery Unit GX1 / Fuel Rump Relay
		to selled to surgery in the surgery su		Aoliva	3. Diagno	Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake
			Protecteds.	JA NOIKSWESGEN AG.	3. Diagno	osis and Testing $27$



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						Manifold Sensor GX9, Checking", page 698.
						<ul> <li>Check the EVAP Can- ister Purge Regulator Valve 1 - N80 Refer to</li> </ul>
		Nolkswagen AG. Volk	swagen AG does no			⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688





DTC / De- scrip- tion	Monitor Strategy of Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sensor Signal Biology Study Study Sensor 1 Sensor 1	Of Kange	Delta lambda of 2nd lambda control loop > 0.065 [-] (CBTA)  Delta lambda of 2nd lambda control loop > 0.070 [-] (CBUA)  Delta lambda control loop > 0.070 [-] (CBUA)	<ul> <li>Modeled exhaust gas temp 400 – 1,000° C</li> <li>Delta engine load &lt; 12.0%</li> </ul>		• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  → O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716 .  - Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer to → F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Check- ing", page 690 .  - Check the Intake Manifold Sensor - GX9 Refer to → I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .



Signal Biase d/ Stuck Rich Bank 1 Sen- 1 Se	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2S heater front ready  O2S heater rear ready  Fuel cut off not active  Catalyst heating not active  SAI not active  Case 1:  1st lambda control loop not at min or max limit  2nd lambda control loop active  Case 2:  1st lambda control loop active  Case 2:  1st lambda control loop active  1st lambda control loop active  Case 2:  1st lambda control loop active	P2196 O2 Sen- sor Signal Biase d/ Stuck Rich Bank 1 Sen-	Sensors Front Out Of Range	Delta lambda of 2nd lambda control loop < -0.065 [-] (CBTA)      Delta lambda of 2nd lambda control loop < -0.070 [-]	gas temp 400 – 1,000° C  Delta engine load < 12.0%  Exhaust gas mass flow 18.0 – 180.0 kg/h  Lambda control closed loop  2nd lambda con- trol closed floop  O2S front ready  O2S heater front ready  Catalyst heating not active  Catalyst heating not active  Case 1:  1st lambda con- trol loop not at min or max limit  2nd lambda con- trol loop active  Case 2:  1st lambda con- trol loop at min limit  O2S front < 1.0  O2S rear voltage  < 0.4 V  Case 3:  1st lambda con- trol loop at max limit  O2S front > 1.0 [-]  O2S rear voltage	• Multiple	accepted with respect to the correctness of information in	Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  - Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to  Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690.  - Check the Intake Manifold Sensor - GX9 Refer to  31.6.15 ntake Manifold Sensor GX9, Checking",



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2237 O2 Sensor Positive Current Control Circuit/ Open Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Pump Cur- rent (IP)	<ul> <li>O2S signal front &lt; 1.70 V</li> <li>And</li> <li>Fuel cutoff &gt; 3.0 s</li> <li>O2S signal front 1.49 – 1.51 V</li> <li>And</li> <li>Delta lambda controller &gt; 0.10 [-]</li> </ul>	O2S ceramic temp > 720° C  Electrical adjustment not active  Heater control closed loop  Evap purge valve ready  O2S ceramic temp > 720° C  Lambda modulation > 0.02 [-]  Lambda control closed loop  Heater control	<ul> <li>5.0 s</li> <li>Multiple</li> <li>6.5 s</li> <li>Multiple</li> </ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P2243 O2 Sensor Reference Voltage Circuit/ Open Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Nernst Volt- age (UN)	<ul> <li>Internal resistance &gt; 950.0 Ω</li> <li>O2S signal front &lt; 0.20 V</li> </ul>	• Heater control active	• 25.5 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  303.6.23 xy- gen Sensor 1 Before Catalytic Converter CATON CATON CONVERTER CATON CONVERTER CATON CATON CATON CATON CATON CATON CATON CATON CATON CAT
P2251 O2 Sensor Negative Current Control Circuit/ Open Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Vir- tual Mass (VM)	<ul> <li>O2S signal front 1.47 – 1.53 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> </ul>	<ul> <li>Modeled exhaust gas temp &lt; 750 Ω</li> <li>No fuel cutoff &gt; 2.0 s</li> <li>Heater control active</li> </ul>		. DA nagswellovy	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2257 AIR Sys- tem Con- trol "A" Circuit Low	Relay Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .
P2258 AIR System Control "A" Circuit High	Relay Short To Battery Plus	• Signal current 0.60 – 1.20 A	<ul> <li>Pump relay commanded on</li> <li>Engine speed &gt; 80 RPM</li> <li>RPM</li> </ul>	O.5 s     Continuous     AG. Volkswage	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to \$\frac{33.6.24 eco}{53.6.24 eco}{1.00 \text{ Nation Pump Motor Pump Motor Pump Motor Pump Motor V101, Checking", \$\frac{1}{2}\$\$ \$\frac{1}
Biase d/ Stuck	Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 30.0% En- richment)	rear not os- cillating at reference < 600.0 mV	22.0 – 120.0 kg/h (CBTA)  • Modeled exhaust	(CBTA) • Multiple	· 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter to  33.6.22 xy- gen Sensor 1 After Catalytic Con- verter GX7, Checking", page 713.



				OCHOIC C	scan 1001 - Euit	1011 07 .2022
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Signal Biase d/ Stuck Rich	Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 20.0 - 30.0% Closed Loop Enrichment) (CBUA)  Oxygen Sensors Rear 2 - Point - LSF Stuck Rich: 7.0% En- leannment) If Enlean- ment Is Not Successful: Waiting For Next Fuel Cut Off (CBTA)	(CBTA) • O2S signal rear not oscillating at reference > 600.0 mV	Mass air flow 30.0 – 120.0 kg/h (CBUA)  Modeled exhaust gas temp > 350° C  O2S rear readiness > 10.0 s (CBUA)  2nd lambda control closed loop  (CBTA)  Mass air flow 22.0 – 120.0 kg/h (CBTA)  Modeled exhaust gas temp > 350° C  O2S rear readiness > 30.0 s (CBTA)  Fuel cut off > 3.0 s  2nd lambda control closed loop		• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)". page 680.  - Check the Oxygen Sensor 1 After Catalytic Converter GX7 Refer to  ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7. Checking". page 713.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	risedby	MIL Illumina- <sub>Nagen A</sub> tion olkswa	dure <sub>of</sub>	·
	Oxygen Sensors Rear (Bina- ry Check Of Response Time At Fuel Cut Off (CBTA)	<ul> <li>(CBTA)</li> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 7,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2-Sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust</li> </ul>	• Multiple	Delot4	- DA negeweel No Vydyng	C of & CCept any liability
	Oxygen Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% - 15.0% Closed Loop En- leanment) If Enlean- ment Is Not Successful: Waiting For Next Fuel Cut Off (CBUA)	(CBUA) • O2S signal rear not oscillating at reference > 600.0 mV	<ul> <li>(CBUA)</li> <li>Mass air flow 30.0 – 120.0 kg/h (CBUA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 10.0 s (CBUA)</li> <li>Fuel cut off &gt; 3.0 s</li> <li>2nd lambda control closed loop</li> </ul>	• 80.0 s (CBUA) • Multiple		- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion a. Volkswagen AG o	Component Diagnostic Procedure
	Oxygen Sensors Rear (Bina- ry LSF) Check Of Response Time At Fuel Cut Off (CBUA)	<ul> <li>(CBUA)</li> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 4,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>(CBUA)</li> <li>Rich voltage (enable) &gt;= 548.0V</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2-sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>	• 4.5 s (CBUA) • Multiple	.ĐA nag	Oes not start the or ace of ac
O2 Sen- sor	Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 30.0% En- richment)	O2S signal rear not os- cillating at reference < 600.0 mV	<ul> <li>Mass air flow 22.0 – 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s</li> <li>2nd lambda control closed loop</li> </ul>	• 210.0 s • Multiple	• 2 DCY	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
O2 Sen- sor Signal Biase d/ Stuck Rich	Oxygen Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% En- leanment) If Enlean- ment Is Not Successful: Waiting For Next Fuel Cut Off	O2S signal rear not oscillating at reference > 600.0 mV      Response	2nd lambda control closed loop     Rich voltage (en-	<ul> <li>210.0 s</li> <li>Multiple</li> <li>4.5 s</li> </ul>	• 2 DCY	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con verter G465, Checking (CBUA)*, page 680	SOF RIVERS
	Sensors Rear (Bina- ry LSF) Check Of Response Time At Fuel Cut Off	time at fuel cut off > 6.0 s  • And • Measurement range from fuel cut off to voltage threshold <= 191.0 mV  • And • Number of checks (initial phase) >= 1.0 [-]  • Or • Measurement range from fuel cut off to O2 mass flow threshold >= 7,000.0 mg  • And • Number of checks (initial phase) >= 1.0 [-]	able) >= 548.0V  • Lean voltage n.a.  • O2S rear ready  • Rear O2 - sensor signal oscillating monitoring ready  • EVAP purge valve diagnosis ready  • O2S front ready  • Fuel cut off active  • Front O2 - sensor lambda signal > 4.0 [-]  • Modeled exhaust gas temp. > 480°	• Multiple	- ĐAng		on information in this or the state of the s



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
MAP/ MAF - Throt- tle Po- sition Corre- lation	Leak to In- take Mani- fold Adap- tation Value Monitoring		<ul> <li>Desired mass flow 0.0 – 25.0 kg/h</li> <li>EVAP purge valve closed</li> <li>EGR off</li> </ul>	• 10.0 s • Multiple	• 2 DCY	Check for air leaks near the throttle body, oil fill cap not tight or oil dipstick not seated in tube. Also check for any engine gaskets that can cause additional air to enter the crankcase can set this fault as the PCV system is not metered. If a vacuum leak or crankcase seal is the cause, the idle may be rough or unstable.
	25.	authorised by Volkswage	n AG. Volkswagen AG does n	of guarantee or acc		- Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698.
	purposes, in part or in whole, is hotosmilled in the committee of the comm		AG. Volkswagen AG does n	Co	oteny liability with respect to the correctness of information in this cool, the correctness of th	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
	ommercial Full of Commercial Full of Commercial Full of Pull of Commercial Full of Commer	600 146116		116111d00 jus	information in this cloud.	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to   E3.6.10 VAP Canister
		rotected by cop.	A .DA nagswa)	MOV KO's	3. Diagno	Purge Regu-



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						lator Valve 1 N80, Check- ing", page 688
Igni- tion Coil "A" Pri-	Ignition Coils Short To Ground	Signal cur- rent > 24.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the Ignition Coils with Power Output Stage. Refer to</li> </ul>
mary Con- trol Circuit Low			Engight angel	<sub>ad</sub> byVolkswager	AG. Volkswagen A	⇒ 3,6.14 gni- tion ©oils With Power Output Stage, Checking", page 696.
P2301 Igni- tion Coil "A" Pri- mary Con- trol Circuit High	Čoils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	ercial purposes, in part or in whole, is 1880.	Continuous	· ZDC1	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P2303 Igni- tion Coil "B" Pri- mary Con- trol Circuit Low	Ignition Coils Short To Ground	Signal cur- rent > 24.0 mA	• Engine speed > 680 RPM			- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P2304 Ignition Coil "B" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2306 Ignition Coil "C" Primary Control Circuit Low	Čoils Short To Ground	Signal current > 24.0 mA  NVolkswagen AG. Volk	Engine speed > 680 RPM  swagen AG does not guarante  guarante	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to    ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
P2307/lgni-tion Côil "C" Pri-mary Con-trol Circuit High	Ignition Coils Short To Battery Plus	Signal voltage > 5.1 – 7.0 mA	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696 .
Igni- tion Coil "D"	Ignition Coils Short To Ground	• Signal current > 24.0 mA	<ul> <li>Engine speed &gt; 680 RPM</li> <li>Sylvage Maylor for the speed &gt;</li> <li>Engine speed &gt;</li> </ul>	O.5 s     Continu-sous     Ous     Ous	2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
		• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking". page 696.

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Di- agnostic Proce- dure
P2312 Ignition Coil "E" Primary Control Circuit Low	Ignition Coils Short To Ground	Signal current > 24.0 mA  May be a second of the current of the c	Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P2313 Igni- tion Coil "E" Pri- mary Con- trol Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage, Refer to 13.6.14 gnition Coils With Power Output Stage, Checking", page 696
P2400 EVAP Sys- tem Leak De- tec- tion Pump Con- trol Cir- cuit/ Open	LDP Open Circuit	• Signal volt- age > 4.40 – 5.60 V	<ul> <li>LDP commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	O.5 s     Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2401 EVAP Sys- tem Leak De- tec- tion Pump Con- trol Circuit Low	LDP Short To Ground	• Signal volt- age < 2.15 – 3.25 V	<ul> <li>LDP commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
EVAP System Leak Detection Pump Control Circuit High	Plus ,		LDP commanded on     Engine speed > 80 RPM  wagen AG does not guarantee	Continuous  Oracology  Oracology  Annual Individual Individua	to the correc	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2403 EVAP Sys- tem Leak De- tion Pump Sense Cir- cuit/ Open	Reed Sensor Rationality Check Unable To Close	• Low signal voltage > 0.5 s	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>Integrated purge flow &gt; 29.90 g</li> <li>Restart temperature difference &gt; 52 K</li> <li>Vehicle speed &gt;= 0 km/h</li> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Evap purge valve ready</li> <li>LDP commanded off</li> </ul>	• 0.5 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706.
	Reed Sensor Rationality Check Unable To Open	High signal voltage > 12.0 s And Number of checks 30.0 [-]	Time after engine start 12.0 – 1,200.0 s  Preceding engine shut-off time 21,600.0 s  ECT 5 – 105° C  ECT @ start 5 – 105° C  Air temperature 5 – 95° C  Altitude < 2,700.0 m  Intake manifold vacuum > -2,560.0 hPa  Restart temperature difference > 52 K  Vehicle speed >= 0 km/h	• 12.0 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Cumulative time of high signal volt- age during pumping > 10.0 s	<ul> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Evap purge valve closed, ready</li> <li>LDP commanded on</li> </ul>	• 120.0 s • Once / DCY		
P240 A EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Cir- cuit/ Open	EVAP Leak Detection Pump Open Cir- cuit	age > 4.7 – 5.4 V	Evap pump heater commanded off  AG. Volkswagen AG.      Evan pump heat-	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.
P240 B EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Circuit Low	Detection Pump Short	• Signal voltage < 2.74 – 3.26 V	• Evap pump heater commanded off	O.5 s     Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion (27/68	Component Diagnostic Procedure
P240 C EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Circuit High	EVAP Leak Detection Pump Short To Battery Plus	rent > 2.00 oommercial purposes, in part or in whole, is not of the test of th	Evap pump heat- er commanded on	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144- Refer to  ⇒ L3.6.18 eak Detection Pump V144. Checking ₹3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V∮44, Checking (4 Pin)", page 706, as applicable.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
EVAP System Leak De- tec- tion Pump Sense Circuit Inter- mit- tent/ Erratic	EVAP Leak Detection Pump Sig- nal Check During En- gine Off	Fluctuation of evap pump current during reference measure ment > 1 mA  Or  Drop of evap pump current during pump phase > 6 mA  For time >= 3.0 s	<ul> <li>Engine temperature @ engine start &gt;= 4° C</li> <li>Difference between ECT and IAT @ engine start &lt;= 15 K</li> <li>Ambient air temperature &lt; 35; &gt; 4° C</li> <li>Altitude &lt;= 2700 m</li> <li>Time since engine start in preceding dcy &gt;= 600.0 s</li> <li>Change in battery voltage during monitoring &lt; 1.0 V</li> <li>Engine off time &gt;= 5.0 s</li> <li>Vehicle speed 0 km/h</li> <li>Evap purge adaptation &lt; 5.0 [-]</li> <li>Deviation of filtered evap pump current during reference measurement within range &lt;= 1 mA</li> <li>Change in relative evap pump current during monitoring n.a.</li> <li>Within time n.a.</li> <li>(During ECM keep alive-time after ignition off, max. time) &lt; 900.0 s</li> <li>Airbag not activated</li> <li>(After MIL illumination because of any EVAP leakage the monitor is only activated every) 1 dcys</li> </ul>	• 800.0 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2414 O2 Sen- sor Ex- haust Sam- ple Error Bank 1 Sen- sor 1	Oxygen Sensors Front Sig- nal Range Check (Check For Sensor At Ambient Air)	<ul> <li>Threshold 1:</li> <li>Signal voltage 3.10 – 4.77 V</li> <li>Threshold 2:</li> <li>Signal voltage 2.50 – 3.06 V</li> <li>Depending on gain factor that actual is used for sensor</li> </ul>	Lambda value < 1.6 [-]  O2S ceramic temp. > 7.15 °C  Fuel cut off not active  Heater control closed loop  SAI not active  If low fuel signal then wait > 0.0 s	15.0 s     Multiple AG. Volkswagen	• 2 DCY  AG does not guarante	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking page 716
P2431 AIR System Air Flow/ Pressure Sensor Circuit Rang e/ Performanc e Bank 1	Air System Pressure Sensor Ra- tionality Check	Difference between SAI pressure and ambient pressure not (-60.0 – 60.0 shPa	• SAI done	• 0.5 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Reter to S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.
P2432 AIR System Air Flow/ Pressure Sensor Circuit Low Bank 1	Air System Pressure Sensor Sig- nal Range Check	Signal voltage < 0.5 V	J	0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to   S3.6.25 econdary Air Injection Sensor 1 G609. Checking", page 721.
P2433 AIR Sys- tem Air Flow/ Pres- sure Sen- sor Circuit High Bank 1	Air System Pressure Sensor Sig- nal Range Check	Signal voltage > 4.5 V		0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.



DTC / Monitor De- scrip- tion Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2440 AIR System Switc hing Valve Stuck Open Bank 1	SAI pressure measured with SAI pressure sensor vs. modeled while SAI valve closed < 65.0%  **Mathematical Properties**  **Authoritis**  **Aut	• ECT 5 – 108° C • IAT 5 – 100° C • Altitude < 2,700.0 m • SAI pressure sensor ready  Sed by Volks Wagen AG. Volks	• 45.0 s • Once / DCY	Pot guarantee or accepte	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to  ⇒ S3.6.26 eco ndary Air Injection Solenoid Valve N112, Checking", page 723 .  Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to ⇒ S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
EVAP Sys-	EVAP Leak Of Detection Pump Ra-	current dif- ference be-	Engine tempera- ture @ engine start >= 4° C	• 13.5 s	• 2 DCY	Check the     Leak Detection Pump -
hing Valve Per-	tionality Check Dur- ing Engine Off	Check Durence measing Engine urement to	check Dur- ence meas- urement to  tween relea- ence meas- urement to  tween relea- tween ECT and	DCY		V144 Refer to ⇒ L3.6.18 eak Detection
for- manc e/ Stuck			Ambient air tem- perature < 35; > 4° C			Pump V144, Checking (3 Pin)", page 704, or
Open		, Volksw	• Altitude <= 2,700 agen <b>m</b> a. Volkswagen AG do	98 n <sub>Of</sub>		⇒ L3.6.19 eak Detection
	· · · · · · · · · · · · · · · · · · ·	essauthorised by v	• Time since engine start in preceding dcy >= 600.0 s	or guarantee or	gcc Op.	Pump V144, Checking (4 Pin)", page 706, as ap-
	s not bermite		Change in bat- tery voltage dur- ing monitoring < 1.0 V		(and ligolitish with	plicable.
	whole, ie		• Engine off time >= 5.0 s		nrespec	
	art orin		Vehicle speed 0 km/h		stothec	
	urposes, in p		• Evap purge adaptation < 5.0 [-]		orrectness	
	orcommercial pu		<ul> <li>No sudden change in evap pump current (filling event) &lt; 2;</li> <li>-1 mA</li> </ul>		of information in t	
	Steament of the state of the st	Rundoo iya ahayadoo ka	<ul> <li>Altitude &lt;= 2,700         <p>Miles Volkswagen AG do     </p></li> <li>Time since engine start in preceding dcy &gt;= 600.0 s</li> <li>Change in battery voltage during monitoring &lt; 1.0 V</li> <li>Engine off time &gt;= 5.0 s</li> <li>Vehicle speed 0 km/h</li> <li>Evap purge adaptation &lt; 5.0 [-]</li> <li>No sudden change in evap pump current (filling event) &lt; 2; &gt; -1 mA</li> <li>Deviation of filtered evap pump current during reference measurement within range &lt;= 1.0 mA</li> <li>Change in relative evap pump current during</li> </ul>	WO Vya Majir kap	, italificada	
		.gegp.	tive evap pump current during monitoring n.a.	Wayir		
			Within time n.a.			
			(During ECM keep alive-time after ignition off, max. time) < 900.0 s			
			Airbag not activated			
			(After MIL illumi- nation because of any EVAP leakage the mon-			



Pumpi justment ng	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sensors Sensors Sensor Circuit Ad-pumpi justment of Circuit Ad-pumpi voltage (IA) current Trim Circuit/ Open Bank 1 Sensor Sensor Se							
Engine Coolant Temperature Coolant Temperature Sensor Rationality Measured perature Sensor Sor 1 low Refer-Circuit Rang e/ Performance e  U000 1 GAN: CAN-Bus Readling Back Speed CAN Communication Bus  CAN: CAN-Communication Bus  Engine Coolant Temperature 60° C  Maximum reference ence temperature 60° C  Multiple  Maximum reference ence temperature 60° C  Coolant Temperature 60° C  CAN: CAN-Coolant Temperature 60° C  CAN: CAN-Bus terminal resistance. Can Continuous  CAN: CAN-Bus terminal resistance. Check the CAN-Bus terminal resistance. Can Can Check the CAN-Bus terminal resistance. Can Can Can Check the CAN-Bus terminal resistance. Can	O2 Sen- sor Pumpi ng Cur- rent Trim Cir- cuit/ Open Bank 1 Sen-	Sensors Front Open Circuit Ad- justment	front > 4.77	<ul> <li>temp. &lt; 750° C</li> <li>O2S ceramic temp. &gt; 720° C</li> <li>Fuel cut off active</li> <li>Heater control closed loop</li> <li>If low fuel signal</li> </ul>		• 2 DCY	Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking",
U000 CAN: CAN-Bus Reading Back Sent Message (Powertrain)  U000 CAN: CAN-Bus Reading Back Sent Message (Powertrain)  U000 CAN: CAN-Bus Terminal resistance. Refer to  U000 CAN: CAN-Bus Terminal Resistance. Checking page 676.  U000 CAN: CAN-Bus Terminal Resistance. Check Terminal Resistance. Can-Bus Terminal Resistance. Can-Bu	Engine Coolant Temperature Sensor 1 Circuit Rang e/ Performanc	Coolant Tempera- ture Sensor Rationality Measured Engine Coolant Temp. Be- low Refer-	Measured engine coolant temp. not within in a range of the reference model > 11 K	Maximum reference temperature 60° C	Multiple		Engine Coolant Temperature Sensor G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking",
2 Bus CAN out receiving no message sistance.  CAN Check out receiving no message sistance.  CAN Check out receiving no message sistance.	1 High Speed CAN Com- muni- cation	Bus Read- ing Back Sent Mes- sage (Pow- ertrain)	CAN message no feedback	<ul> <li>Time after igni-</li> </ul>	<ul><li>250.0 ms</li><li>Continu-</li></ul>	• 2 DCY <sub>Drang</sub>	CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance. Checking",
Man	2 High Speed CAN Com- muni- cation Bus Per- for- manc	Bus CAN Solution Cation Check	out receiving no message	tion on 500.0 ms	ms Continuous		CAN-Bus terminal re- sistance. Refer to C3.6.4 AN-
3. Diagnosis and Testing			4	Protected by Contracted by Con	JANSBRINGHON ON	2 Dinem	osis and Testing 29



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U010 1 Lost Com- muni- cation with TCM	CAN: TCM CAN Com- munication With TCM	Received CAN message no message and message salling the salling sallin	• Time afterdgairage,	• Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance between the Transmission Control Module to the Engine/ Motor Control Module - J623 Refer to
U012 1 Lost Communication With Anti- Lock Brake System (ABS) Control Module "A"	Unit CAN	CAN mes- sage no	• Time after ignition on 500.0 ms	Continuous     Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance. Checking", page 676.
U014 6 Lost Com- muni- cation With Gate- way "A"	CAN: Gate- way CAN Communi- cation With Gateway	Received     CAN message no     message	Time after ignition on 500.0 ms	1,000.0 ms     Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance. Checking", page 676.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U015 5 Lost Communication With Instrument Panel Cluster (IPC) Control Mod-	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	Received CAN mes- sage no message  Seauthorised by VolksWas  Seauthorised by VolksWas	Time after ignition on 500.0 ms  and AG. Volkswagen AG does  Time after ignition.	• 500.0 ms • Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
ule	ille dur				182	
U030 2 Soft- ware In- com- pati- bility With Trans- mis- sion Con- trol Mod- ule	CAN: Communication With TCM	Received AT vehicle data TCM signal	• Time after ignition on 500.0 ms	• 100.0 ms • Continuous	Y With respect to the correctness of information	<ul> <li>Check for software up- dates and TSB's. Re- program as necessary. If none are found, re- place the Transmis- sion Control Module. Re- fer to appro- priate repair manual.</li> </ul>
Data Re- ceived From TCM	CAN: CM CAN Com- munication With TCM	• Received data implausible message	• Time after ignition on 500.0 ms	Continuous     Continuous		<ul> <li>Check for software up- dates and TSB's. Re- program as necessary. If none are found, re- place the Transmis- sion Control Module. Re- fer to appro- priate repair manual.</li> </ul>
Data Re-	CAN: Vehicle Speed Sensor CAN Communication With Vehicle Speed Sensor	<ul> <li>Speed sensor signal: initialization error 327.08 km/h</li> <li>Speed sensor signal: low voltage error 327.25 km/h</li> </ul>		• 1,980.0 ms	• 2 DCY	<ul> <li>Check the CAN-Bus terminal resistance. Refer to</li> <li>C3.6.4 AN-Bus Terminal Resistance. Checking", page 676</li> <li>Check the vehicle</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Mod- ule "A"		<ul> <li>Speed sensor signal: sensor error 327.42 km/h</li> <li>Vehicle speed &gt;= 325 km/h</li> <li>Speed sensor signal: out of range 326.39 km/h</li> </ul>		<ul> <li>480.0 ms</li> <li>Continuous</li> <li>2,100.0 ms</li> <li>Continuous</li> <li>480.0 ms</li> <li>Continuous</li> </ul>		speed signal. Refer to  ⇒ V3.6.29 ehicle Speed Signal, Checking", page 729 .
	CAN: Brake Unit CAN Communi- cation With Brake Unit	Received data implau- sible mes- sage	Time after ignition on 500.0 ms	60.0 ms     Continuous		
U042 2 Invalid Data Re- ceived From Body Con- trol Mod- ule	CAN: Ambient Air Temperature Sensor Communication With Instrument Cluster Module	Ambient temperature value (initialization) 0.0 h [-]	Key on     Status ambient     temperature from     instrument clus-     ter no fault     Electrical check     ambient temperature sensor no     fault	• 3.0 s	• 2 DCY	<ul> <li>Check for software up- dates and TSB's. Re- program as necessary. If none are found, re- place the Body Control Module. Re- fer to appro- priate repair manual.</li> </ul>
Data Re- ceived From Instru-	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	• Received CAN message implausible message	Time after ignition on 500.0 ms	600.0 ms     Continuous	• 2 DCY	<ul> <li>Check for correct soft- ware version and VIN or update soft- ware for the IPC Module if available.</li> </ul>
ment Panel Clus- ter Con- trol Mod- ule	CAN: Ambient Air Temperature Sensor Communication With Instrument Cluster Module (CBTA)	temperature value (initial-	Key on     Status ambient temperature from instrument cluster no fault     Electrical check ambient temperature sensor no fault	• 3.0 s	O Vajrigir gar	If OK Te- place the In- strument Cluster Con- tro Module - J285 Refer to appropri- ate repair manual.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
7	CAN: Gate- way CAN Communi- cation With Gateway	Received data implau- sible mes- sage	Time after ignition on 500.0 ms	<ul><li>300.0 ms</li><li>Continuous</li></ul>	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.

## Engine/Motor Control Module, 2012 MY 3.4.3

PODO A A "A" cambaft cambaft Position Slow Response Bank 1  1  Position Slow Response Bank 1  Position Sensor Scrib Status Adjustment Valve 1  Prequency (normal operation) 7.0 times [-] (CBTA)  Prequency (normal operation) 7.0 times [-] (CBUA)  Prequency (normal operation) 7.0 times [-] (CBUA)  Prequency (CBTA)  Prequency (CBTA)  Prequency (CBTA)  Prequency (CBTA)  Prequency (CBTA)  Prequency (CBTA)  Position Sensor G40. Refer to Speed Sensor G28. Refer to Speed Sens	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	A "A" Camshaft Position Slow Respons e Bank	tor Intake Slow Re-	between target position vs. actual position > 8 – 12° CRK (CBTA)  • Difference between target position vs. actual position > 8° CRK (CBUA)  • And • Adjustment angle > 3° CRK	gine start > 1.5 – 3.0 s  • Engine speed 600 – 6,320 RPM  • Oil temperature –48 – 143° C  • Frequency (normal operation) 7.0 times [-] (CBTA)  • Frequency (normal operation) 4.0 times [-] (CBUA)  • Or (CBTA)  • Frequency (CSM) 1.0 times [-] (CBTA)	(CBTA)  12.0 s (CBUA)  Multiple  AG. Volks	vagen AG does not g	Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 am- shaft Adjust- ment Valve N205, Checking", page 672.  - Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 am- shaft Posi- tion Sensor G40, Check- ing", page 674.  - Check the Engine Speed Sen- sor -G28 Refer to ⇒ E3.6.9 ngine Speed Sen- sor G28, Checking",



POO10 VT Actua "A" to Intake Cam- A" to Intake Open Cir- shaft Position Actua- rot "A" Continuation of "Actua- rot "A" Continuation of "Actua- shaft Position Actua- rot "A" Continuation of "Actua- rot "A" Continuation of "	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Position Sensor - G40 Refer to Sensor - G40 Refer	"A" to Cam- shaft to Position Actuator "A" Control Circuit/ Open Bank	tor Intake Open Cir-	age > 4.40 -	• Engine speed > 80 RPM	Continuous		Camshaft Adjustment Valve 1 - N205 Refer to  C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672 .  Check the Engine Speed Sensor -G28 Refer to  E3.6.9 ngine Speed Sensor G28, Checking", page 686 .  Check the
Anservalor Coolected to the service of the service				Mario of purposes, in part or in whole, is not be strained to the whole, is not be strained to the strained of or in part	Jolkswagen AG.	Volkswagen AG doe	Sensor - G40 Refer to C3:6.3 am- shaft Posi- tion Sensor G40, Check- ing", page 674.

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DTC / Monito De- scrip- tion Strateg Descripti		Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0011 VVT Actural tor Intake Camshaft Position - Timing Over-Advance dor System Performanc e Bank 1	between tar-	<ul> <li>Time after engine start &gt; 1.5 – 3.0 s</li> <li>Engine speed 600 – 6,320 RPM</li> <li>Oil temperature –48 – 143° C</li> <li>Frequency (normal operation) 7.0 times [-] (CBTA)</li> <li>Frequency (normal operation) 4.0 times [-] (CBUA)</li> <li>Or (CBTA)</li> <li>Frequency (CSM) 1.0 times [-] (CBTA)</li> </ul>	• 21.0 (CBTA) • 12.0 s (CBUA) • Multiple	• 5 DCA	- Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 amshaft Adjustment Valve 1 N205. Checking". page 672.  - Check the Engine Speed Sensor -G28 Refer to ⇒ E3.6.9 ngine Speed Sensor G28, Checking". page 686.  - Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor - G40 Refer to



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Crank shaft	Camshaft Position Sensor In- let Angular Offset Check	<ul> <li>Permissible deviation &lt; -13.5° CRK</li> <li>Or</li> <li>Permissible deviation &gt; 13.5° CRK</li> </ul>		<ul><li>2.0 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Engine Speed Sensor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686.
1 1	70	. Volkswagen AG. Volk	• Time after en-			- Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 am- shaft Posi-
Sermin.	ankessautorised b		gu <sub>aranie</sub>	*Or &CCEPTERN III III		tion Sensor G40, Check- ing", page 674.
orth Whole, is not				NWITHTOO	epect to th	Camshaft Adjustment Valve 1 - N205 Refer to
I purposes, in part					nect to the correctness of i	C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672.
HO2S Heat-	Heater Front Open	age 2.34 – 3.59 V	Time after engine start > 5.0 s Heater commanded off  "DA NOBENISHION ROLLING!!  "DA NOBENISHI ROLLING!!  "DA NOBENISH!  "DA NOBENISHI ROLLING!!  "DA NOBENISHI ROLLING!!	0	ĺ	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to
Sen- sor 1	Circuit	o Vd befoeld	DA nagewaylov Volright	ov -		O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0031 H02S Heat- er Con- trol Circuit Low Bank 1 Sen- sor 1	Oxygen Sensors Heater Front Short To Ground	Heater voltage < 2.34 V  thorised by Volkswagen  Heater volt-	Time after engine start > 5.0 s Heater commanade off and off	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
HO2S Heat- er con- trol	Sensors Heater Front Short To Battery Plus	• Heater voltage > 3.59 V	<ul> <li>Time after engine start &gt; 5.0 s</li> <li>Heater commanded on</li> </ul>	0.5 s     Continuous	• 2 D The correctness of information in this cook	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
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		1	50			-/3
DTC /		Malfunction Cri-	Secondary Parame-	Monitoring	MIL Illumina-	Component Di-
De-	Strategy	teria and	ters with Enable	Length	tion	agnostic Proce-
scrip-	Description	Threshold Val-	Conditions	Time		dure
tion	_	ue 🕉				OIII
P0036	Oxygen Sensors Heater Rear 2 - Point - LSF Open Cir- cuit	Heater volt- age 4.50 –	Engine speed > 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Heater commanded off   Playing Start > 5.0 s (CBUA)  Playing Start > 5.0 s (CBUA)  Playing Start > 5.0 s (CBUA)  Playing Start > 5.0 s (CBUA)	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter GX7-1 After Catalytic Converter GX7-1 Checking page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)",



DTC / Monitor De- scrip- tion  Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0037 Oxygen H02S Sensors Heat- er Rear 2 - Con- trol Short To Circuit Low Bank 1 Sen- sor 2	ourposes, in part or in w.	Engine speed > 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Heater commanded off      Time after engine start > 5.0 s (CBUA)			- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.	hills with respect to the companies of Information in the

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
HO2S Heat- er Con- trol Circuit	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Battery Plus	rent 2.70 – 5.50 A 5.50 Part or in who	Engine speed > 80 RPM (CBTA)  Time after engine start > 5.0 s (CBUA)  Heater commanded on  Turned on Turn	• 0.5 s • Continuous	• 2 DCY	page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic	respect to the correctness of inform.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er Con- trol Circuit Bank 1 Sen- sor 3		Heater voltage 4.50 – 5.50 V  Heater voltage 4.50 – 5.50 V	Engine speed > 80 RPM     Heater commanded off  AG. Volkswagen AG. Volkswage	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter GX65 Checking CBUA)",
	or commercial purposes, in part or in whole	The state of Bull do Single of Singl	Keswagen AG. Volkswagen A	по пкамадане	In respect	page 680 .

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0043 C HO2S S Heat- H er F Con- F	Sensors Heater Rear 2 - Point - LSF Short To	Heater voltage < 3.0 V  Section of the section	• Engine speed > 80 RPM • Heater commanded off	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to Sensor for Bank 1 Catalytic Converter G465 Refer to Checking Center Converter G465, Checking (CBUA)", page 680 .

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	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
commercial purposes, in part orin whole, is notoshare,	P0044 HO2S Heat- er Con- trol Circuit High Bank 1 Sen- sor 3	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Battery Plus	• Heater current 2.70 – 5.50 A	Engine speed > 80 RPM     Heater commanded on	0.5 s  Continuious  Output  Continuious	• 2 DCY	- Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713 - Check the Center Oxy- gen Sensor
							for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.
	Ambi- ent Air Tem- pera-	Ambient Air Tempera- ture Sensor Short To Battery / Open Cir- cuit	<ul> <li>Ambient air temperature</li> <li>-50° C</li> </ul>	CAN active	<ul><li>6.0 s</li><li>Multiple</li></ul>	• 2 DCY	<ul> <li>Check the Outside Air Temperature Sensor - G17 Refer to</li> <li>O3.6.21 utside Air Temperature Sensor G17, Checking", page 711</li> <li>Check the CAN-Bus terminal re-</li> </ul>
							sistance. Refer to  C3.6.4 AN- Bus Terminal Resistance, Checking", page 676.



De- St	Monitor Strategy escription	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Di- agnostic Proce- dure
P0071 Amilian Tent Amilian Temperature Sensor Circuit "A" Rang e/ Performanc e	mpera- e Sensor nge/ rform- ce	IAT at engine start (depending on engine off time) < 24.75° C  And  Diff. IAT vs. AAT at engine start (depending on engine off time) > 24.75° C  And  Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C	Vehicle speed > 20 km/h  Vehicle speed > 20 km/h	• Once / DCY	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  ⇒ O3.6.21 utside Air Temperature Sensor G17, Checking", page 711.  - Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
312 Rep.	o. Gr.ST - Ge	eneric Scan Tool	Logume > 2.0 s     Logume > 5.0 s	Andrew Paragon	A . DA	G does not quarantee or a ceptan liability with respect to the correctivess of information in the correctives of information in the correctives of information in the corrective state of the cor



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Ambi-	ture Sensor Short To Ground	Ambient air temperature > 87° C     Ambient air temperature >	• Time after engine start n.a.	• 6.0 s • Multiple	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  3.6.21 utside Air Temperature Sensor G17. Checking". page 711.  - Check the CAN-Bus terminal resistance. Refer to  3.6.4 AN-Bus Terminal Resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance. Refer to
Manifold Absolute Pressure/ Barometric Press	Manifold Pressure Sensor Ra- tionality Check Low	Difference manifold pressure - lower threshold model < 0.0 hPa     Model range 0.0 – 800.0 hPa	• Time after en gine start n.a.	ೊ <sub>ಸ್ಟ</sub> 450.0 s • Multiple	· DAS DOANON W	- Check the Throttle Valve Control Module - GX3 / J338 Refer to   T3.6.28 hrottle Valve Control Mod-
sor	Manifold Pressure Sensor Ra- tionality Check High	Difference manifold pressure - lower threshold model > 0.0 hPa     Model range 650.0 - 1,080.0 hPa				ule GX3 / J338, Checking", page 726 .  - Check the Intake Manifold Sensor - GX9 Refer to
	Manifold Pressure Sensor Ra- tionality Check	Diff. altitude sensor sig- nal vs. mani- fold pressure signal at en- gine start > 60.0 hPa	<ul> <li>Time after engine start &lt; 25.0 s</li> <li>Engine speed &lt; 330 RPM</li> </ul>			I3.6.15 ntake Manifold Sensor GX9, Checking", page 698
	Manifold Pressure Sensor Adaptation Value Mon- itoring	Offset value manifold pressure for load calcula- tion in driv- ing condition range 2.0 > 55.0 hPa	<ul> <li>Driving condition range 1 (omsna):</li> <li>Engine speed &lt; 800 RPM</li> </ul>			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Offset value manifold pressure for	Desired mass flow 5.0 – 25.0 kg/h			
		load calcula- tion in driv- ing condition range 2.0 <	Delta adaptation value range 1.0 < 0.10 kg/h			
		-60.0 hPa	• For time 1.0 s			
		edbyVo	• Driving condition range 2 (opsra):	G does not guara		
		1855 authorise	• Engine speed > 1,400 RPM	र वेह	tee of acce	
	į	and different to the state of t	<ul> <li>Manifold pres- sure &lt; 425.0 hPa</li> </ul>		OF RILLIE	
	16, 15 NOt bes		<ul> <li>Delta adaptation value range 1.0 &lt; 0.10 kg/h</li> <li>For time 1.0 s</li> <li>Driving condition range 2 (opsra):</li> <li>Engine speed &gt; 1,400 RPM</li> <li>Manifold pressure &lt; 425.0 hPa</li> <li>Delta adaptation value range 2.0 &lt; 2.97 hPa</li> <li>For time 8.0 s</li> </ul>		diitiwithre	
	ohw r		For time 8.0 s		spoo	P.
	part or ir		Driving condition range 3 (opua):			to the cc
	oses, in		Desired mass flow > 40.0 kg/h			orrectne
	ial purp		• Manifold pres- sure > 550.0 hPa			SS Of :
	or commerce		Delta adaptation value range 3.0 < 2.97 hPa		ormationin	
	2		• For time 5.0 s		this of	
		04010111	General:		alguno	
		Red Willess authorised by Vo	<ul> <li>For time 8.0 s</li> <li>Driving condition range 3 (opua):</li> <li>Desired mass flow &gt; 40.0 kg/h</li> <li>Manifold pressure &gt; 550.0 hPa</li> <li>Delta adaptation value range 3.0 &lt; 2.97 hPa</li> <li>For time 5.0 s</li> <li>General:</li> <li>Engine operation in every driving condition &gt;= 2.0 times</li> <li>Diagnosis evap purge system not active</li> <li>Engine speed 500 – 6,000 RPM</li> <li>Manifold pressure &gt; 0.0 kPa</li> </ul>	huspa Nolkewagel	inkoo *	
			Diagnosis evap purge system not active			
			• Engine speed 500 – 6,000 RPM			
			Manifold pres- sure > 0.0 hPa			
			Ratio manifold pressure to am- bient pressure < 0.85 [-]			



			500			720
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0107 Mani- fold Abso- lute Pres-	Manifold Pressure Sensor Short To Ground	• Signal volt- age < 0.20 V	, 1871,	1.0 s     Continuous	• 2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to
sure/ Baro- metric Pres- sure Sen- sor Circuit Low		orożał purposes, in į	THE WOOD OF SHALL OF THE WAS A SHALL OF			T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.
			to steament of Olivery			- Check the Intake Manifold Sensor - GX9 Refer to
			*46J1VQO2VQ	Profected Option Profession		day Refer to  3.6.15 ntake  Manifold  Sensor GX9, Checking", page 698.
Mani- fold Abso- lute Pres-	Manifold Pressure Sensor Short To Battery / Open Cir-	• Signal volt- age > 4.86 V		1.0 s     Continuous	• 2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to
sure/ Baro- metric Pres- sure Sen- sor Circuit High	cuit					T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726
riigii						Check the Intake Manifold Sensor - GX9 Refer to
						⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698

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	8			Py.		
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Intake Air Temperature Sensor Circuit Rang e/	Intake Air Temperature Rationality Check	<ul> <li>Diff. ECT vs. IAT at engine start (depending on engine off time) &gt; 24.75° C</li> <li>And</li> <li>Diff. IAT vs. AAT at engine start (depending on engine off time) &gt; 24.75° C</li> <li>And</li> <li>Diff. AAT vs. ECT at engine start (depending on engine off time) &lt; 24.75° C</li> </ul>	<ul> <li>Engine off time &gt; 6.0 h</li> <li>Blockheater</li> <li>ECT &gt;= 143° C</li> <li>Time after engine start 2.0 s</li> <li>Or</li> <li>Diff. ECT vs. ECT outlet &lt;= 20° C</li> <li>Time after engine start 2.0 s</li> <li>Solar radiation case 1:</li> <li>AAT @ start &lt;= 2° C y uebens</li> <li>Minus</li> <li>AAT @ condition:</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> <li>Solar radiation case 2:</li> <li>IAT @ start &lt;= 2° C</li> <li>Minus</li> <li>IAT @ condition:</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> </ul>	• 60.0 s • Once / DCY	OC Pictto the correctness of information in this	<ul> <li>Check the Intake Manifold Sensor - GX9 Refer to</li> <li>I3.6.15 ntake Manifold Sensor GX9. Checking", page 698.</li> <li>Check the Engine Coolant Temperature Sensor -G62 Refer to</li> <li>E3.6.7 ngine Coolant Temperature Sensor G62. Checking", page 683.</li> <li>Check the Engine Coolant Temperature Sensor G62. Checking", page 683.</li> <li>Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to</li> <li>E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Intake Air Tempera- ture Sensor Short To Ground	• IAT > 130° C		• 5.0 s • Multiple	• 2 DCY	- Check the Intake Manifold Sensor - GX9 Refer to  3.6.15 ntake Manifold
Circuit Low Bank						Sensor GX9, Checking", page 698.
						<ul> <li>Check the Engine Coolant Temperature Sensor -G62 Refer to</li> <li>⇒ E3.6.7 ngine</li> </ul>
						Coolant Temperature Sensor G62, Checking", page 683
		uttori	<sub>sed by</sub> Volkswagen AG. Volks	wagen AG d <sub>oes r</sub>	ot guarantee	<ul> <li>Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to</li> </ul>
		whole, is not partition in the state of the	<sub>gad</sub> by Volkswagen AG. Volks		* accopia	E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.
		Copyridate of commercial purposes, in part or in whole				page 685.
		S. To Skelled to Style	Bunga Brid	00	COMPINGO TROUT	nin this ex
			Protected by	. DA nagenax	lloV,	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Intake Air Tem- pera-	Intake Air Tempera- ture Sensor Short To Battery / Open Cir-	• IAT < -46° C		<ul><li>5.0 s</li><li>Multiple</li></ul>	• 2 DCY	<ul> <li>Check the Intake Mani- fold Sensor - GX9 Refer to</li> </ul>	
ture Sen- sor 1 Circuit High Bank	cuit			horised by Volksw	agen AG. Volkswag	∃ I3.6.15 ntake I3.6.15 ntake Manifold Sensor GX9, Checking page 698	
1			ill difference of the second			<ul> <li>Check the Engine Cool- ant Temper- ature Sensor -G62 Refer</li> </ul>	V. accoptan liberation
			ss, in part orin whole, is,			to ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683	Mrespections
			e or commercial purpose			<ul> <li>Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to</li> </ul>	o accept any liability with respect to the sources of Information in this object.
			to the state of commercial purposes, in part or in whole, is not being the state of commercial purposes, in part or in whole, is not being the state of the state	THE THE CODING POLICE	erva en al antique de la companya de	E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Othecking", page 685	600 jaludos.



P0116 Engine Coolant gline Coolant grine Coolant Temperature Sensor 1 Stuck Low Temperature Sensor 1 Circuit Range of Formance e  Por formance Per f
-4014 NA 00.



		T	l -			1 -
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Engine		• Temp_01			
	Coolant Tempera-		ECT @ start n.a.			
	ture Sensor Stuck High		• ECT 105 – 140° C			
			Cold start n.a.			
			• Temp_02			
			• Substitute ECT > -45° C			
			Driving condition L:			
			<ul><li>Vehicle speed 0 – 20 km/h</li></ul>			
			<ul> <li>Mass air flow 4.0         <ul> <li>40.0 kg/h</li> </ul> </li> </ul>			
			• Time required / > 10.0 s			
			<ul> <li>Frequency 3.0 times</li> </ul>			
			And     And	olkswagen AG do	go	
		,	Driving condition     H:		on of guarantee	
		dunkessau	<ul><li>Vehicle speed 50</li><li>– 150 km/h</li></ul>		Orace	% %
		thormitie	<ul> <li>Time required / &gt; 10.0 s</li> <li>Frequency 3.0 times</li> <li>And <ul> <li>Driving condition</li> <li>H:</li> <li>Vehicle speed 50 - 150 km/h</li> </ul> </li> <li>Mass air flow 32.0 - 352.0 kg/h</li> <li>Time required / &gt; 40.0 s</li> <li>Frequency once</li> </ul>			32
		ole, is nc	• Time required / > 40.0 s			Withrest
		rinwh	Frequency once			pectto
		ophing or commercial purposes, in part or	Vehicle speed 50 - 150 km/h  Mass air flow 32.0 - 352.0 kg/h  Time required / > 40.0 s  Frequency once			respect to the correctness of information in this country.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Engine Coolant Tempera- ture Sensor Stuck In Range	<ul> <li>Signal in range 75.0 – 105.0° C</li> <li>And</li> <li>No change on signal n. a.</li> </ul>	<ul> <li>Cold start detected</li> <li>Stuck high n.a.</li> <li>Temp_01</li> <li>ECT @ start n.a.</li> <li>Temp_02</li> <li>Substitute ECT n.a.</li> <li>Driving condition L:</li> <li>Vehicle speed n.a.</li> <li>Mass air flow n.a.</li> <li>Frequency n.a.</li> <li>And</li> <li>Driving condition H:</li> <li>Vehicle speed n.a.</li> <li>Mass air flow n.a.</li> <li>Time required / n.a.</li> <li>Time required / n.a.</li> </ul>	• 2.0 s • Once / DCY	kswagen AG does n	ot guarantee oracceptantille o
			Frequency n.a.	Protected	-ĐA nagsway	IO NAGINDINGO THEIR TO SEE



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0117 En- gine Cool- ant Tem- pera- ture Sen- sor 1 Circuit Low	ا م ا	• ECT > 140° C	λG. Volkswagen AG does no	• 2.0 s • Multiple	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683
ourooses, in part or is	or commerciant	C thanised by Volkswagen			and liability with respect to the correctness of information in this order.	- Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to  ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685 .
	Sealth Diguido	Protected by copyright;	JIKENISBEIJ ACT.	Mahighidoo jirah	n's GO	<ul> <li>Check the engine cool- ant thermo- stat. Refer to appropriate repair man- ual.</li> </ul>



s	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
T p	O118 En- gine Cool- ant Fem- bera- ture Sen- sor High	Engine Coolant Tempera- ture Sensor Short To Battery O Open Cir- cuit	• ECT < -40° C	Secondary Parameters with Enable Conditions  Gen AG does not guarantee or a	• 2.0 s • Multiple	• 2 DCY	- Check the Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683 .
ses, in part or in whole, is					th respect to the correctn		<ul> <li>Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to</li> </ul>
. a or commercial purpos	arenid.	Throttle Position Sensor 1 Ra-			ess of information in this oo		E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685
	*04.00	1460 14614doo Aq1	Defoelot <sup>Q</sup>	.DA nagaswayon Volthein 400.	lighti.		<ul> <li>Check the engine cool- ant thermo- stat. Refer to appropriate repair man- ual.</li> </ul>
F	Pedal Posi- tion	Throttle Position Sensor 1 Rationality Check	• And	• Engine speed > 480 RPM	• 0.3 s • Multiple	• 2 DCY	<ul> <li>Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to</li> </ul>
S H C F	Sen- sor/ Switc n "A" Circuit Rang e/ Per- for-		<ul> <li>Actual TPS1 - calc. value &gt; actual TPS2 - calc. value</li> <li>Or</li> <li>TPS1 - calc. value &gt; 9.0%</li> </ul>				T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726 .
n	nanc e		value > 9.0%				



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0122 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit Low	Throttle Position Sensor 1 Out Of Range Low	• Signal voltage < 0.20 V	killed unless authorised by Volksw	• 0.1 s  AG Volksw  Multiple	• 2 DCY agen AG does not go	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
P0123 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit High	Throttle Position Sensor 1 Out Of Range High	Signal volt- age > 4.81 V  age > 4.8 onumerolar voltages in a second representation of the second		• 0.1 s • Multiple	• 2 DCY	page /26.  - Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking page 726.
P0130 O2 Sen- sor Circuit Bank 1 Sen- sor 1	Oxygen Sensors Front Out Of Range	• O2S ceramic temp. < 640° C	Modeled exhaust temp > 300° C  Fuel cut off not active  Again	Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  D3.6.23 xygen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0131 O2 Sen- sor Circuit Low Volt- age Bank 1 Sen- sor 1	Oxygen Sensors Front Sig- nal Range Check	Short to ground  Virtual mass (VM) < 1.75 V  Or  Nernst voltage (UN) < 1.50 V  Or  Adjustment voltage (IA) < 0.30 V  Or  Adjustment voltage (IP) < 0.30 V		• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
O2 Sen- sor Circuit High Volt- age Bank 1 Sen- sor 1	Oxygen Sensors Front Sig- nal Range Check	<ul> <li>Short to battery</li> <li>Virtual mass (VM) &gt; 3.25 V</li> <li>Or</li> <li>Nernst voltage (UN) &gt; 4.40 V</li> <li>Or</li> <li>Adjustment voltage (IA) &gt; 7.0 V</li> <li>Or</li> <li>Adjustment voltage (IP) &gt; 7.0 V</li> </ul>	<sub>ilks</sub> wagen AG. Volkswagen A	• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
	or commercial purposes, in part or in	State to Black to State the State of St			in the state of th	at to the correctness of infor-



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0133 O2 Sensor Circuit Slow Response Bank 1 Sensor 1	Oxygen Sensors Front Re- sponse Rate Moni- toring, Area Ratio	Symmetric fault:     Lower value of both area ratios R2L and L2R < 0.25 [-] (CBTA)	<ul> <li>O2S front - min. operation temperature is reached &gt; 720° C</li> <li>O2S front - time since operation readiness &gt; 40.0 s</li> <li>Engine speed 1,160 - 2,720 RPM</li> <li>Engine load 13.99 - 45.0%</li> <li>Gradient of engine load &lt;= 7.99%</li> <li>Exhaust system lag time calculation 0.15 - 0.33 s</li> <li>Gradient of exhaust system lag time calculation &lt;= 0.0 s</li> <li>ECT &gt;= 10° C</li> <li>Catalyst temperature &gt;= 450° C</li> <li>Lambda control set-point prior to diagnostic fuel</li> </ul>	• 67.0 s • Once / DCY	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to   ⇒ O3.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716 .
			Tank leakage de- tection not active			



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	Mil. Illumina- tion	Component Diagnostic Procedure
P0135 O2 Sen- sor Heat- er Cir- cuit Bank 1	Oxygen Sensors Heater Front Out Of Range High	• Q2S ceramic temperature < 720° Colonol • And • Heater duty cycle > 100.0%	gas temp > 550°	• 7000 s Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to
Sensor 1	Oxygen Sensors Heater Front Ra- tionality Check (Sensor Heating Up)	O2S ceramic temp < 715° C  And Time after O2S heater on 35.0 s	<ul> <li>ECT at start &gt; -10° C</li> <li>Engine shutoff time &gt; 120.0 s</li> <li>During ECM keep alive time (key off) &lt; 500.0 s</li> </ul>	• 35.0 s • Multiple		O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716



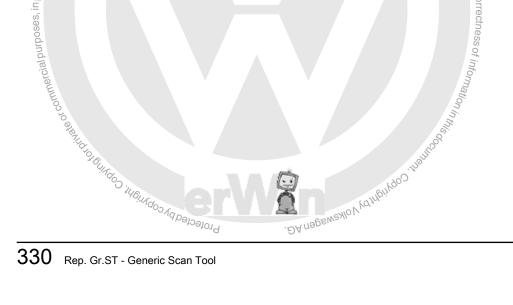
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0136 O2 Sen-sor Circuit Bank 1 Sen-sor 2	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Heater Coupling Check)	Threshold Value  Delta voltage one step at heater switching > 2.0 V  And  Number of heater coupling >= 6.0 times [-]	Case 1: sensor ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s (CBTA)  For time > 22.0 s (CBUA)  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)	• 60.0 s • Multiple	• 2 DCY	agnostic Proce-
	**************************************	Edo Station of the state of the	<ul> <li>Dew point exceeded</li> <li>For time &gt; 10.0 s</li> <li>Heater not active</li> <li>For time &gt; 0.0 s</li> </ul>	MOV VOMBINGOD J	ROHE OF THE PROPERTY OF THE PR	



DTC / Monitor De- scrip- tion Monitor Strategy Descriptior	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	And     Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3 measure ments)	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a. (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time n.a. (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Fuel cut off not active</li> <li>Catalyst purge not active</li> </ul>		of guarantee of acceptal	for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)".



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit High Volt- age Bank 1 Sen- sor 2	Battery Plus)	• Signal voltage > 1.08 V • For time > 5.0 s	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>Lambda set value &gt; 0.995 [-]</li> </ul>	• 5.0 s • Multiple	its with respect to the	<ul> <li>Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to</li> <li>⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.</li> <li>Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to</li> <li>⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.</li> </ul>
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Slow Re- spons e Bank 1 Sen- sor 2	Oxygen Sensors Rear (Binary LSF) Check Of Transient Time At Fuel Cut Off	EWMA filtered transient time at fuel cut off > 0.6 s     O2 voltage between 201.0 – 401.0 mV     Number of checks (initial phase) >= 4.0 [-]     Number of checks (step function) >= 3.0 [-]	<ul> <li>Rich voltage (enable) &gt;= 548.0 mV</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> <li>Or</li> <li>Trigger for step change: delta transient time &gt; 0.3 s</li> </ul>	• 4.5 s • Multiple	• 1 DCY	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713 .
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DTC / De- scrip- tion	Strategy ter	function Cri- ceria and eshold Val- ue	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P013 A O2 Sen- sor Slow Re- spons e- Rich to Lean Bank 1 Sen- sor 2	Slow Response - Rich to Lean Bank 1 Sensor 2 cut s	• Real 025 leady			- For CBTA: Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- Verter GX7. Checking". page 713  - For CBUA: Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)". page 680 .



P0140 Oxygen Sensors Sensors Sensors Sensor Point - LSF Circuit Oxygen 1.6 Circuit Contect - Activity Detected Bank Son Copen Circuit Open Circuit) Sensor 22 ox 2 ox 2 ox 2 ox 2 ox 2 ox 3 ox 3 o

## Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

		AG. Volkswagen 4			
DTC / Monitor De- Strategy scrip- tion	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Oxygen Sensors Rear 2 Point LSF O2S Signal Check - Circuit Continuity (Sensor Ground Line Open Circuit)	<ul> <li>And</li> <li>Exhaust temperature &gt; 670° C</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Valid Ri-measurements &gt; 10.0 times [-]</li> </ul>	• 50.0 s • Multiple	extern liability with respect to the correctness of information in this occurring to the correctness of the formation in this occurring to the correctness of the cor	



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Heat-	Oxygen Sensors Heater Rear 2 - Point - LSF Out Of Range	Heater resistance     1,200.0 –     32,400.0 Ω     (CBTA)     Heater resistance     880.0 –     30,400.0 Ω     (CBUA)	Modeled exhaust gas temp. 200 – 680° C  Engine shut-off-time > 120.0 s  (During ECM keep alive-time after ignition off) < 500.0 s (CBTA)  (During ECM keep alive-time after ignition off) < 1,200.0 s (CBUA)  Number of checks 10.0 [-]  Fuel cut off not active (100 pages)	• Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter to



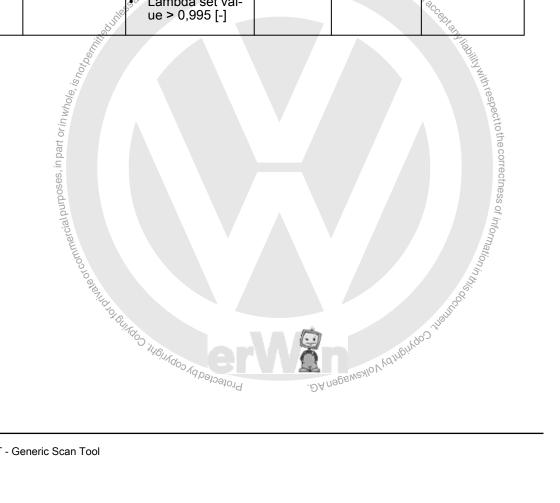
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity (Heater Coupling Check)	a) purposes, in part or in whole, is not below this	<ul> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>For time &gt; 10.0 s</li> <li>Heater not active</li> <li>For time &gt; 0.0 s</li> </ul>			- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7. Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Page 713.
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DTC / De- scrip- tion	Strategy Description	Malfunction Criteria and Threshold Value	Secondary Parameters with Enable  gen AG <b>Conditions</b> <sub>AG dos</sub>	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Low Volt- age Bank 1 Sen-	Oxygen Sensors Rear 2 - Point - LSE O2S Signal Check Circuit Con- tinuity (Short To Ground, Core Con- nection Sig- nal Wires)	<ul> <li>Signal voltage &lt; 0.06 V</li> <li>For time &gt; 3.0 s</li> <li>And</li> <li>Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) &lt; 0.01 [V]</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a.</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time n.a.</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Fuel cut off not active</li> <li>Catalyst purge not active</li> </ul>	3.0 s     Multiple	est and liability with respect to the correctness of information in this odo, the correctness of the correctness	<ul> <li>Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .</li> <li>Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .</li> </ul>



DTC / Monitor De- scrip- tion Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0144 Oxygen Sensors Sensor Rear 2 - Point - LSF O2S Signal Check - Out Of Range High (Short To Battery Plus)		<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Lambda set value &gt; 0,995 [-]</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .

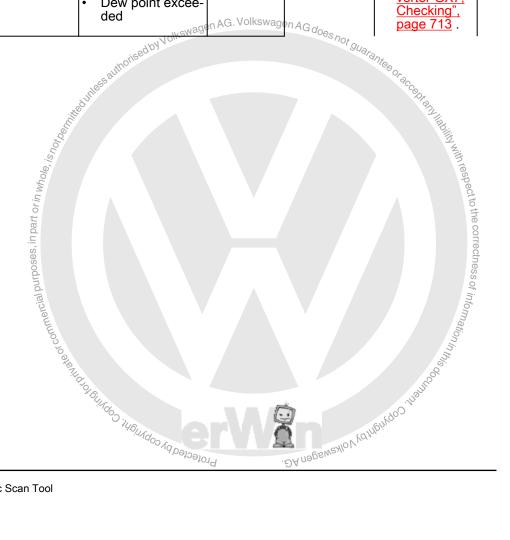




P0145 Ozygen Sensors Sensors Sensors Sensors Sensors Rear (Binary In J.S.F) (Circuit Spons Peul Cut off Slow Fuel Cut off 1.5 s



DTC / Monitor De- scrip- tion Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring MIL Illumina- Length tion Time	Component Diagnostic Procedure
P0146 O2 Sen- sor Sor Circuit No Activi- ty De- tected Bank 1 Sen- sor 3  Check - Circuit Continuity (Sensor Signal Line Open Circuit)	3.0 s	<ul> <li>0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceedable</li> </ul>	• 5.0 s • Multiple  • AG. Volkswagen AG does not a	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713.





Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity (Sensor Ground Line Open Circuit)  - For time > 12.0 s - Sensor sufficient heated up if ex- haust temperature > Ground Line Open Circuit)  - For time > 12.0 s - Sensor sufficient heated up if ex- haust tempera- ture >= 1,263° C - For time > 18.0 s - Or - Heater power >= 24.0% - Valid Ri-meas-		DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and <sub>⊙</sub> Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
times [-]	_	tion Holough	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Ground Line Open Circuit)	<ul> <li>Internal resistance &gt; 40,000.0 Ω</li> <li>And</li> <li>Exhaust temperature &gt; 670° C</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Valid Ri-measurements &gt; 10.0</li> </ul>	• 50.0 s • Multiple		



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen Sensors Heater Rear 2 - Point - LSF Out Of Range	Heater resistance 1,200.0 – 32,400.0 Ω      Residual purposes, in part or in whole, is also provided by the sistence of commercial purposes.      Residual purposes in part or in whole, is also provided by the sistence of commercial purposes.      Residual purposes in part or in part of the sistence of commercial purposes.      Residual purposes in part or in part of the sistence of the sis	Modeled exhaust gas temp. 200 – 680° C  Engine shut-off-ortime > 120.0 s  Ouring ECM keep alive-time after ignition off) < 500.0 s  Number of checks 10.0 [-]  Fuel cut off not active  Heater commanded on	Multiple  Volkswagen AG		ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to  3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7,
rect Fuel Com-	ECM: EGAS Module Function Monitoring: Injection Time	Comparison with fuel quantity in-correct	Internal engine speed > 1,200 RPM (9,00)0000000000000000000000000000000000	• 0.5 s • Continuous ous . DA ua	· 2 DCY DANGUE	Check for contaminated/aged fuel or possible high concentration of alcohol in fuel
	ECM: EGAS Module Function Monitoring: Lambda Mode  ECM: EGAS Module Function Monitoring: Mixture	Internal check failed      Correction factor incorrect				(above 15%). Poor quality fuel will also increase consumption. Replace with fresh fuel if believed to be contaminated. Refer to appropriate repair manual.
	Control					<ul> <li>Check the         Oxygen         Sensor 1         Before Catalytic Converter -         GX10 Refer to</li> <li>⇒</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Fuel quantity incorrect				O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
						<ul> <li>If fuel quality is adequate, replace the Engine/ Motor Control Module.</li> <li>Refer to appropriate repair manual.</li> </ul>
P0201 Cylin- der 1 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous  . Volkswagen AG	• 2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.
P0202 Cylinder 2 Injector "A" Circuit	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	• Minjection valve	0.5 s     Continuous	2 DCV %	- Check the Fuel Injectors. Refer to F3.6.13 uel Injectors, Checking", page 694.
P0203 Cylinder 3 Injector "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors Checking page 694
	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6,13 uel Injectors, Checking", page 694.
P0205 Cylinder 5 Injector "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt- age 4.50 – 5.50 V	Injection valve switched off • Engine speed > 80 RPM	• 0.5 s	· 2 DCY	Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.

DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Di- agnostic Proce- dure
P0221 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "B" Circuit Rang e/ Per- for- manc e	Throttle Position Sensor 2 Rationality Check	<ul> <li>TPS1 - TPS2 &gt; 6.30%</li> <li>And</li> <li>Actual TPS2 - calc. value &gt; actual TPS1 - calc. value</li> <li>or</li> <li>TPS2 - calc. value &gt; 9.0%</li> </ul>	• Engine speed 480 RPM	• 0.3 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338. Checking", page 726 .
P0222 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "B" Circuit Low	sor 2 Out	• Signal volt- age < 0.20 V	EO TO OPENIA DE LA PARTITA DE	• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
Throt- tle/	Throttle Position Sensor 2 Out Of Range High	• Signal volt- age > 4.81 V		• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P0261 Cylin- der 1 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0262 Cylinder 1 Injector "A" Circuit High	Short To Battery	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Cylin- der 2 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
Cylin- der 2 Injec- tor "A" Circuit High		• Signal cur- rent 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0267 Cylinder 3 Injector "A" Circuit Low	Injection Valves Short To Ground	<ul> <li>Signal volt- age &lt; 3.0 V</li> </ul>	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0268 Cylinder 3 Injector "A" Circuit High	Short To Battery	• Signal current 2.20 – 4.0 A	Injection valve switched on lkswag  Fingine speed > 80 RPM  Injection valve switched on lkswag  Republication valve switched	• 0.5 s	12.	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0270 Cylin- der 4 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to F3.6.13 uel Injectors, Checking", page 694
P0271 Cylin- der 4 Injec- tor "A" Circuit High	Short To Battery Plus		<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to September 1997 - 1997
P0273 Cylinder 5 Injector "A" Circuit Low	Injection Valves Short To Ground	Signal voltage < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	Continuous	• 2 DCY	Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0274 Cylin- der 5 Injec- tor "A" Circuit High	Injection Valves Short To Battery Plus	• Signal cur- rent 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0300 Ran- dom/ Multi- ple Cylin- der Mis- fire De- tected	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	Emission threshold misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> </ul>	• 1,000 rev • Multiple	• 2 DCY	<ul> <li>Check the intake system visually for leaks (false air).</li> <li>Check the spark plugs visually for signs of fouling.</li> <li>Check for an</li> </ul>
		poses, in part or in whole, is not be milk the state of t	ECT @ start > -     48° C     Fuel cutoff not active     Rough road not detected agen AG. V      Trorie ad by Norks agen AG. V	olkswagen AG do	es not guarantee or act	engine me- chanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal com- pression reading and may contrib- ute to this concern. Re- fer to appro- priate repair manual for low com- pression readings or for carbon buildup re- moval.
		pur pinate or commercial pur	Protected by copyright.	- ĐA naga	м Бирмандиво Лог	<ul> <li>Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in</li> <li>C3.1 heck", page 14 and/or to appropriate repair manual.</li> <li>Check the Fuel Injectors. Refer to</li> </ul>



DTC / Monit De- scrip- tion Descrip	gy teria and	ters with Enable	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	<ul> <li>Catalyst damage mis fire rate (MR) &gt; 3.4 - 20.3% (CBTA)</li> <li>Catalyst damage mis fire rate (MR) &gt; 3.4 - 20.0% (CBUA)</li> </ul>	-	<ul> <li>200 rev</li> <li>Multiple</li> </ul>	• Immediately	F3.6.13 uel Injectors, Checking", page 694.  - Check the Ignition Coils with Power Output Stage. Refer to    3.6.14 gnition Coils     With Power Output Stage. Checking",
P0301 Cylinder 1 Misfire Speed Fluctual (Single Multiple	• Emission threshold mistire rate	Active after engine start idle –     150 RPM + 1	• 1,000 rev	· 2 DCY	<ul> <li>Check the intake system visually for leaks (false air)</li> <li>Check the spark plugs visually for signs of fouling.</li> <li>Check for an engine mechanical fault with a cylinder compression test. Carbon</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	, to duli de sau	Catalyst damage misfire rate (MR) > 3.4 – 20.3% (CBTA)  Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)	AG. Volkswagen AG does no	200 rev     Multiple  Ouarantee Oraclept	• Immediately	chanical testing in  ⇒ C3.1 heck", page 14 and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694 .  - Check the Ignition Coils with Power Output Stage. Refer to ⇒ I3.6.14 gnition Coils With Power
	ole, is notbermi				Tiability with res	With Power Output Stage, Checking", page 696.
Cylin- der 2 Mis- fire	NA ICOLON	threshold misfire rate (MR) > 2.0%	gine start idle – 150 RPM + 1 camshaft rev	rev • Multiple	to the corre	Check the intake system visually for leaks (false air).
tected	mmeroien		range 500 – 6,400 RPM • Engine torque >= 0.0 Nm • IAT > - 48° C		ness of information	Check the spark plugs visually for signs of fouling.
	SO TO STRANGE OF THE CO.	Protected by copyright,	ECT @ start > -     48° C      Fuel cutoff not active     Rough road not detected     Sylvenyo	Manughdoo jilaas	otness of information in this oo	- Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low com-



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and ക്യ Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring	MIL Illumina- tion	Component Diagnostic Procedure
	, is n <sub>0,4</sub>	• Catalyst damage mis- fire rate (MR) > 3.4 – 20.3% (CBTA)		<ul><li>200 rev</li><li>Multiple</li></ul>	• Immediately	pression readings or for carbon buildup re- moval.
	urposes, in part or in who <sub>k</sub>	fire rate (MR) > 3.4 – 20.3% (CBTA)  Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)				Check the fuel pressure and delivery the quantity. Respect to fuel resystem mechanical extentions in
	commercial p	000			MONGO Halkoo	page 14 and/or to appropriate repair manual.
		Ald O Sundo			Mooritation	- Check the Fuel Injec- tors. Refer to
		*46juAdoo	Protected by	A nagewaylo V yo	Mor	F3.6.13 uel Injectors, Checking", page 694
						<ul> <li>Check the Ignition Coils with Power Output Stage. Refer to</li> </ul>
						in tion Coils tion Coils With Power Output Stage, Checking", page 696.
	Misfire Crankshaft Speed Fluctuation (Single Or	Emission threshold misfire rate (MR) > 2.0%	Active after engine start idle –     150 RPM + 1 camshaft rev	• 1,000 rev	• 2 DCY	- Check the intake system visually for leaks (false air).
De- tected	Multiple)		<ul> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> </ul>			- Check the spark plugs visually for signs of foul- ing.
			<ul> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> </ul>			- Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage mis- fire rate (MR) > 3.4 – 20.3% (CBTA)	Rough road not detected	200 rev     Multiple	Immedi- ately	cause a higher than normal com- pression reading and may contrib-
		Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)	on the different sea of the sea o	<sub>SW</sub> agen AG. Volk	swagen AG does no	concern. Re- fer to appro- priate repair manual for low com- pression readings or
			The state of the s		7	for carbon buildup reamoval.  - Check the fuel pressure
		mercial purposes, in part or in who <sub>le, i</sub>				- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
		ammercial purpose				C3.1 heck", page 14 and/or to appropriate repair manual.
			O TO GRAND OUT OF THE WAS NOT ON THE			- Check the Fuel Injectors. Refer to
			J48Mados Aqp	Protecte	Ikewagen AG.	Injectors, Checking", page 694
						Ignition Coils with Power Output Stage. Refer to
						⇒ I3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696
Cylin- der 4 Mis- fire	Speed Fluctuation (Single Or	Emission threshold misfire rate (MR) > 2.0%	Active after engine start idle – 150 RPM + 1 camshaft rev	• 1,000 rev • Multiple	• 2 DCY	Check the intake system visually for leaks (false air).
De- tected	Multiple)		• Engine speed range 500 – 6,400 RPM			Check the spark plugs



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	o <mark>MIL Illumina-</mark> notion Parantee	Component Diagnostic Procedure
		• Catalyst damage misfire rate (MR) > 3.4 –	<ul> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> </ul>	<ul><li>200 rev</li><li>Multiple</li></ul>	Immedi- ately	visually for signs of foul- ing.
		20.3% (CBTA)  • Catalyst damage misfire rate (MR) > 3.4 – 20.0%	ECT @ start > -     48° C      Fuel cutoff not active     Rough road not detected	DA NE	OKSWID V VOINSWAD	- Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.
						- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
						C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
						- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
						<ul> <li>Check the Ignition Coils with Power Output Stage. Refer to</li> </ul>
						⇒ 13.6.14 gni- tion Coils With Power Output



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						<u>Stage,</u> <u>Checking",</u> page 696
Cylin- der 5 Mis- fire	Speed Fluctuation	Emission threshold misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> </ul>	• 1,000 rev • Multiple	• 2 DCY	Check the intake system visually for leaks (false air).
De- tected	Multiple)	ithorisedby	range 500 – 6,400 RPM  • Engine torque >=	n AG does not gue	rantee -	Check the spark plugs visually for
		unlessau	0.0 Nm		Oraccept.	signs of foul- ing.
		onniko Olimiko	• ECT @ start > -		872 light	Check for an engine me-
	hole, is now	8	Fuel cutoff not active		Œ.	chanical fault with a cylinder compression test. Carbon
	nmercial purposes, in part or in w	on its dunies sauthorised by	Rough road not detected			buildup may cause a shigher than pormal compression greading and may contribute to this concern. Re-
	Jour	SORRIGIO WOUNDOO		owo ke	HENGOO HABITOO OO	priate repair manual for low com- pression readings or for carbon buildup re- moval.
			Protected	<sup>DA</sup> nəpsw <sub>e</sub> v,		<ul> <li>Check the fuel pressure and delivery quantity. Re- fer to fuel system me- chanical testing in</li> </ul>
						E3.1 heck", page 14 and/or to ap- propriate re- pair manual.
						Check the     Fuel Injectors. Refer to
						⇒ F3.6.13 uel Injectors, Checking", page 694



	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
or commercial purposes, in part or in whole, is not be.			<ul> <li>Catalyst damage misfire rate (MR) &gt; 3.4 – 20.3% (CBTA)</li> <li>Catalyst damage misfire rate (MR) &gt; 3.4 – 20.0% (CBUA)</li> </ul>		200 rev     Multiple     Multiple	Immediately	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
or commerce.	tribu- tor En-	RPM Sensor Rationality Check	Counted teeth vs. reference incorrect  Or  Monitoring reference gap failure  Out  Out  Monitoring reference gap failure	Opyright DV Volkswagen A	• 2.0 s	• 2 DCY	- Check the Engine Speed Sensor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686 .  - Check the Camshaft Position Sensor -G40 Refer to  ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674 .
		RPM Sensor Signal Activity Check	<ul> <li>Camshaft signals &gt; 5.0 [-]</li> <li>And</li> <li>Engine speed no signal</li> </ul>		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sensor -G28 Refer to  E3.6.9 ngine Speed Sensor G28, Checking", page 686.  - Check the Camshaft Position Sensor -G40 Refer to  E3.6.3 amshaft Position Sensor G40, Checking", page 674.

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0324 Knock / Com- bus- tion Vibra- tion Con- trol Sys- tem Error	Knock Control Internal Hardware Check	<ul> <li>Signal fault counter (combustion) &gt; 30.0 [-]</li> <li>Or</li> <li>Signal fault counter (measuring window) &gt; 2.0 [-]</li> </ul>	• Engine speed > 2,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sensor 1-G61 Refer to
P0327 Knock / Com- bus- tion Vibra- tion	Knock Sensor Short To Ground Port A Knock Sensor Short To Ground Port B	Lower threshold < - 0.70 V  All the sauth  Compared to the saut	• Engine speed >	• 0.5 s dos	• 2 DCY s not guarantee or accep	9011 O11001C
Sen- sor 1 Circuit Low Bank 1 or Single Sen- sor	Knock Sen- sor Signal Range Check	• Lower threshold < 1.4 – 5.6 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	• 0.5 s • Multiple		- Check the Knock Sensor 2 G66 Refer to   K3.6.\$7 nock Sensor 2 G66, Checking", page 702 €
Knock / Com- bus- tion Vibra- tion Sen-	Knock Sensor Short To Battery Plus Port A Knock Sensor Short To Battery Plus Port B	Upper threshold > 1.0 V     Note that the second in t	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sen- sor 1 -G61 Refer to
sor 1 Circuit High Bank 1 or Single Sen- sor	Knock Sen- sor Signal Range Check	• Upper threshold > 23.0 – 92.0 V	• Engine speed > 2,000 RPM • ECT > 41° C • Engine load > 30.0 – 33.8%	• 0.5 s • Multiple	SMOVED THE	700 .  - Check the Knock Sensor 2 -G66. Refer to  ⇒ K3.6.17 nock Sensor 2 G66, Checking", page 702 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Knock / Com- bus-	Knock Sen- sor Short To Ground Port A Knock Sen-	Lower threshold < - 0.70 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to
tion Vibra- tion Sen-	sor Short To Ground Port B					K3.6.17 noc k Sensor 2 G66, Check- ing", page
sor 2 Circuit Low Bank	Knock Sen- sor Signal Range Check	• Lower threshold < 1.4 – 5.6 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> </ul>	• 0.5 s • Multiple		702 .
2			• Engine load > 30.0 – 33.8% en AG		does not	
	Knock Sen- sor Short To Battery Plus Port A		• Engine speed >	• 0.5 s • Continuous	• 2 DCYPntes	- Check the Knock Sen- sor 2 -G66 Refer to
tion Vibra- tion Sen-	Knock Sensor Short To Battery Plus Port B	threshold > 1.0 V				K3:6.17 noc k Sensor 2 G66, Check- ing", page
sor 2 Circuit High Bank 2	Knock Sensor Signal Range Check	Upper threshold > 23.0 - 92.0 Vectors  Vectors	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> </ul>	• 0.5 s • Multiple		702.
		0868,	• Engine load > 30.0 – 33.8%			
Cam- shaft Posi- tion Sen- sor "A" Circuit Rang	Phase Sensor 1 Rationality Check	• Signal pat- tem incor- rect	Protected by copyright, Cop	0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40- Refer to C3.6.3 amshaft Position Sensor
e/ Per- for- manc		,	O HOLLODALODALIONS		Obhught by Volkswag	G40, Check- ing", page 674
e Bank 1 or Single Sen-			-+01d	.ĐA u		- Check the Engine Speed Sen- sor -G28 Refer to
sor						E3.6.9 ngine Speed Sen- sor G28, Checking", page 686.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0342 Cam- shaft Posi- tion Sen- sor "A" Circuit Low Bank 1 or Single Sen- sor	Phase Sensor 1 Rationality Check	Signal voltage permanently low     Crankshaft signal 8.0 [-]		O.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674 Check the Engine Speed Sensor -G28 Refer to ⇒ E3.6.9 ngine	
P0343 Cam- shaft Posi- tion Sen- sor "A" Circuit High Bank 1 or Single Sen- sor	Phase Sensor 1 Rationality Check	Signal voltage permanently high     Crankshaft signal 8.0 [-]	ercial purposes, in part or in whole, is not be in part or in whole, is not be in part or in whole, is not be in the interest of the interest	Ous o	• 2 DCY AG. Volkswagen A	to  C3 6 3 am-	atranyliadiliymiin lost
P0351 Ignition Coil "A" Primary Control Circuit/ Open	Ignition Coils Open Circuit	Signal current -0.25 – -2.0 mA  Or Internal check failed	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	Checking", page 686.  Check the Ignition Coils with Power Output Stage. Refer to  3.6.14 ggi tion Coils With Power Output Stage. Checking", page 696.	"Alloninthis Quality and the state of the st



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0352 Ignition Coil "B" Primary Control Circuit/ Open	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696 .
P0353 Ignition Coil "C" Primary Control Circuit/ Open	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
Igni- tion Coil	Ignition Coils Open Circuit	Signal current -0.25 -2.0 m/A  To Or  Internal check failed	• Engine speed > G. V680 RPM4G does not	• 0.5 s • Continu- gual antegoraco	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
Igni- tiondu Sesoulus "E" Sesoulus Pri- mary Con-	Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	• 0.5 s • Continuous	Y Whe correctness of information in this of	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
	TO DINGO	Protected by copyright.	Olkswagen AG.	Mahlohiqoo jagas		2.5



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0410 AIR Sys- tem "A"	Air System Check After SAI	> 50.0 hPa	Mass airflow 7.0       – 120.0 kg/h      Delta engine load -10.0 – 10.0%/rev      ECT 5 – 108° C      IAT 5 – 100° C      Altitude < 2,700.0 m      SAI pressure sensor ready  Air valve commanded off	• 6.0 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.  - Check the Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719.  - Check the Secondary
P0413 AIR Sys- tem Switc hing Valve "A" Circuit Open	cuit	• Signal volt- age 9.25 – 11.25 V	• Air valve commanded off  • Engine speed >  • 80 RPM	Continu- ous		Air Injection Solenoid Valve - N112 Refer to
P0414 AIR System Switc hing Valve "A" Circuit Shorted	Air Valve Short To Ground	• Signal volt- age < 6.0 V	Air valve commanded off     Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to   ⇒ S3.6.26 eco ndary Air Injection Solenoid Valve N112.



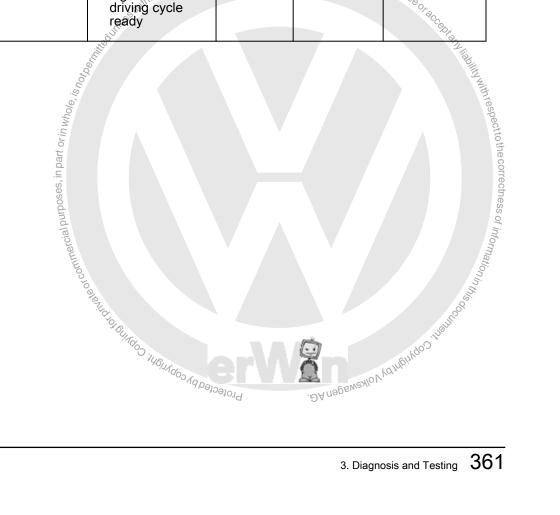
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Air Valve Short To Battery Plus	• Signal current 2.20 – 4.20 A	<ul> <li>Air valve commanded on</li> <li>Engine speed &gt; 80 RPM</li> </ul>			Checking", page 723 .
P0418 AIR Sys- tem Con- trol "A" Circuit	Air Pump Relay Open Circuit	• Signal voltage 4.50 – 5.50 V	Pump relay commanded off     Engine speed > No. 1888     RPM     Republic of the state of t	• 0.5 s • Continu- Nageous	• 2 DCY  wagen AG does not	Pump Motor -V101 Re- fer to
		and leioial pur	TO OBOUND THOUSE THE PROPERTY OF THE PROPERTY	BL/V	Jolkewagen AG.	S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719.



P0420 Catalyst Catal System Cystem Cystem Cystem Cystem Cyster Cystem Converter Cygen Cystem Converter Cygen Cystem Converter Cygen Cystem Converter Cygen Cystem Cystem Converter Cygen Cystem Cystem Converter Cygen Cystem Converter Cygen Cystem Converter Cygen Cystem Cystem Converter Cygen Cystem Cystem Converter Cygen Cystem Converter Cygen Cystem Con	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
• Modeled exhaust gas temp. in catalyst system, upper range n.a.  • Minimum modeled exhaust gas temp. in catalyst system > 400° C  • For time > 120.0 s  • Filtered minimum modeled exhaust gas temp. in catalyst system > 450° C  • Engine load 12.8 − 65.3% (CBUA)  • Engine load 12.8 − 60.0% (CBTA)  • Minimum modeled exhaust gas temp. in catalyst system > 450° C  • Engine load 12.8 − 60.0% (CBTA)	P0420 Cata- lyst Sys- tem Effi- ciency Below Thres hold Bank	System Measure Of OSC Compared To OSC Of Borderline	OSC / OSC of borderline catalyst measured OSC (HC and NOx-correlated) < 1.0 [-]	gine start > 343.0 s  Or  Time after dew point > 343.0 s  Delta exhaust mass flow < 25.0 kg/h,	(CBUA)  • 30.0 s (CBTA)  • Once / DCY n AG. Volkswage	n AG does not guara,	Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to   30.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to  Catalytic Con- verter G465 Checking (CBUA)", page 686.  - Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.23 xy- gen Sensor 1 Before Catalytic Converter CA10 Refer to  30.6.26 to  30.6.27 to  3



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
			<ul> <li>Evap purge load- ing not high</li> </ul>			
			• Engine speed 1,200 – 3,320 RPM			
			<ul> <li>Range between lambda set value and lambda val- ue &lt; 0.02 [-]</li> </ul>			
			Out of lambda range < 2.0 s			
			Lambda control closed loop			
			Lambda control not at min or max limit			
			Number of checks 3.0 [-]			
			O2S front ready			
			O2S rear ready			
			SAS not active			
			No misfire	AG Volksv	12000	
			<ul> <li>SAS not active</li> <li>No misfire</li> <li>O2S front response monitoring in current driving cycle ready</li> </ul>	agen Act. Vollicy	~senAG does not g	Parantee or accept





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0441 EVAP Sys- tem Incor-	EVAP Sys- tem Func- tional Check	Deviation lambda control < 9.0%     And	<ul><li>Time after engine start n.a.</li><li>Engine speed idle</li></ul>	• 20.0 s • Once / DCY	• 2 DCY	- Check the EVAP Sys- tem for Leaks. Refer to
rect Purge Flow		Deviation idle control < 40.0%	Engine speed deviation < 100 RPM  FOT 2000 C			⇒ S2.2.4 ys- tem, Check- ing For Leaks", page
			• ECT > 60° C			<u>7</u> .
			• Or			<ul><li>Check the EVAP Can-</li></ul>
			• Substitute ECT > 80° C			ister Purge Regulator
			• IAT > 5° C			Valve 1 - N80 Refer
			• Altitude <			to
		uthori	Altitude < 2,700.0 m     Lambda control of closed loop	vagen AG does n	Pt guarantee	E3.6.10 VAP Canister Purge Regu- lator Valve 1
		rille dunless de			acceptal	
		to of in whole, is not be seen in which it is not				Check the Leak Detec- tion Pump - V144 Refer
						L3.6.18 eak Defection Pump V144, Checking (3 Pin)", page 704
		Jake or commercial				- Check the Leak Detec- tion Pump - V144 Refer
		and leave of commercial party of the commercial party	Andoo Ag paro	S S MEN	ONAQUENTOOD THE BUTTO	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706
			,~6/0/4	LEIN MADO		



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0442 EVAP Sys- tem		Time for pressure drop < 1.9 s	• Time after engine start 12.0 – 1,200.0 s	<ul><li>180.0 s</li><li>Once / DCY</li></ul>	• 2 DCY	Check the     EVAP System for     Leaks. Refer
Leak De- tected	ouro orroon		• Preceding engine shut-off time > 21,600.0 s			to ⇒ S2.2.4 ys- tem, Check-
(Small Leak)			• ECT 5 – 105° C			ing For Leaks", page
			• ECT @ start 5 – 105° C			7.
			Air temperature 5     – 95° C     Air temperature     drop after engine	<sub>agen</sub> AG. Volksw	agen AG does not gu	- Check the EVAP Can- ister Purge
			Air temperature drop after engine start < 5 K			Regulator Valve 1 - N80 Refer to
			Intake manifold vacuum >     -2,560.0 hPa		7	⇒ E3.6.10 VAP Canister Purge Regu₂
		hole, is no	• Altitude < 2,700.0 m			lator Valve 15 N80, Check-
		torinw	• Vehicle speed >= 0 km/h			688 .
		s, inpar	Vehicle speed ones > 30 km/h			Check the     Leak Detection Pump -
		onrpose	Selected gear any drive			Ing", page 688 .  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak
		commercial purposes, in part or in whole, is not,	Restart tempera- ture difference > 52 K			Pump V144
		6	Evap purge valve closed			Checking (3 Pin)", page 704
			LDP active			704 .
			driving <sub>4646</sub>	$M_{rec}$	9	Leak Detec- tion Pump -
			Delta ambient pressure < 7.03 hPa	<sub>a</sub> jo1 <sup>Q</sup>	JA NOREWAGEN AG.	o <sup>™</sup> V144 Refer to ⇒ L3.6.19 eak
			• Or			Detection Pump V144,
			• Engine load not < 19.5 – 45.0%			Checking (4 Pin)", page
			• And			<u>706</u> .
			Delta vehicle speed not > -1 km/h			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0444 EVAP Sys- tem Purge Con- trol	EVAP Purge Valve Open Circuit	• Signal volt- age > 4.40 – 5.40 V	EVAP purge valve commanded off     Engine speed > 80 RPM  SWAGEN A S	0.5 s     Continuous	• 2 DCY	Check the     EVAP Can- ister Purge     Regulator     Valve 1 -     N80 Refer to
"A" Circuit Open	ed unterstantionised by	Wolkswagen Ad. Vo.	EVAP purge valve commanded off     Engine speed > 80 RPM  swagen AG does not guarante  - DA UBBENISHION KONUEN  SWAGEN AG DOES NOT GUARANTE  - DA UBBENISHION KONUEN  - DA UBBENISHION KONUEN	Re of acceptant lies.		E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688
art or in whole, is not be				HS WHITE	respect to the c	<ul> <li>Check the Leak Detection Pump - V144 Referto</li> <li>⇒</li> <li>L3.6.18 eak</li> </ul>
ercial purposes, in p				in this open the state of the s	orrectness of info <sub>m</sub>	Detection Pump V144, Checking (3 Pin)", page 704  - Check the
mmo to aren.	0,00			The state of the s	Do.	Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak
	ANGO HEINAG	Protected by	DA nagewaylov Vohlen	, doo't		Detection Pump V144, Checking (4 Pin)", page 706

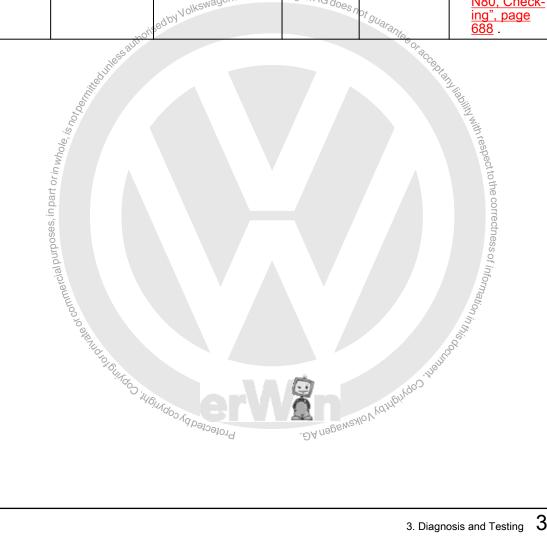


DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0455 EVAP Sys- tem	EVAP System Large Leak Pressure Check	Time for pressure drop < 0.95 s	Time after en- gine start 12.0 – 1,200.0 s	• 180.0 s • Once / DCY	• 2 DCY	<ul> <li>Check the EVAP Sys- tem for Leaks. Refer</li> </ul>
Leak De- tected	Sure Officer		• Preceding engine shut-off time > 21,600.0 s			to ⇒ S2.2.4 ys- tem, Check-
- Large			• ECT 5 – 105° C			ing For Leaks", page
Leak			• ECT @ start 5 – 105° C			7. Check the
			Air temperature 5     – 95° C			EVAP Can- ister Purge
			Air temperature drop after engine start < 8 K			Regulator Valve 1 - N80 Refer to
		NKSWagen AG. Volkswa	Intake manifold vacuum >     -2,560.0 hPa			<u>⇒</u> E3.6.10 VAP Canister Purge Regu-
	orisedbyVo	<sub>Ikswagen</sub> Ad. Vollow	Altitude < 2,700.0 muarante  Vehicle speed >=			lator Valve 1 N80, Check-
, <u>(</u>	855 autho.		Vehicle speed >= 0 km/h	(C_		ing", page 688
			Vehicle speed ones > 30 km/h	CATA HABILITY		Check the     Leak Detection Pump -
le, is not			<ul> <li>Selected gear any drive</li> </ul>	NWithre		V144 Refer to ⇒
ohwnio			<ul> <li>Restart tempera- ture difference &gt; 52 K</li> </ul>	ced tany liability with respect to the correctness of information in this doctor.		L3.6.18 eak Detection Pump V144,
			Evap purge valve closed	le correc		Checking (3 Pin)", page 704
			LDP active	iness		Check the
rcial bu			Deep down hill driving	of infon		Leak Detec- tion Pump -
Or COURTIN			<ul> <li>Delta ambient pressure &lt; 7.03 hPa</li> </ul>	mation in t		V144 Refer to ⇒
Stilvato			• Or	his oo		L3.6.19 eak Detection
40//	Rusdo	3.4	• Engine load not < 19.5 – 45.0%	.Hghu.		Pump V144, Checking (4 Pin)", page
	146H1900	lerW	And Kajulifunde			<u>706</u> .
	~~~/ <sub>0</sub>	Protected	<ul> <li>19.5 – 45.0%</li> <li>And</li> <li>Delta vehicle</li> <li>speed not &gt;= -1</li> <li>km/h</li> </ul>			





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0458 EVAP Sys- tem Purge Con- trol Valve "A" Circuit Low		• Signal volt- age < 2.15 – 3.25 V	<ul> <li>EVAP purge valve commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to   ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.
	Purge Valve Short To Battery	• Signal current > 2.2 A	<ul> <li>EVAP purge valve comman- ded on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	<ul> <li>0.5 s</li> <li>Continuous</li> </ul>	• 2 DCY	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688





DTC De- scrip tior	Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
AIF Sys tem Insu ficie Flov Ban 1	During Catalyst Heating  f- int v k	with SAlvager	G. Vol1220.0 kg/h  Delta engine load -10.0 – 10.0%/rev	adarantee or	2 DCY 2 on history of the correctness of information in this or the correctness of information in the correctness of the	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 eco ndary Air Injection Sensor 1 G609, Checking", page 721.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to ⇒ S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0496 EVAP Sys- tem	Evaporative Emission System In- correct	Actual EVAP pump current vs. difference from	Minimum ignition angle efficiency 20.0%	• 5.0 s	• 2 DCY	<ul> <li>Check the EVAP Can- ister Purge Regulator</li> </ul>
High Purge	Purge Flow - Stuck	last reading > 1.0 [-]	<ul> <li>Engine speed &gt; 20 RPM</li> </ul>			Valve 1 - N80 Refer
Flow	open		<ul> <li>Engine speed Deviation &lt; 100 RPM</li> </ul>			to <u>⇒</u> <u>E3.6.10 VAP</u> Canister
			<ul> <li>Time after en- gine start &gt; 600.0 s</li> </ul>			Purge Regu- lator Valve 1 N80, Check-
			• ECT > 60° C			ing", page 688
ļ			• And			Check the
			<ul> <li>ECT at start &lt; 60° C</li> </ul>			Leak Detec- tion Pump - V144 Refer
ļ			• AAT > 4 [-]			to
ļ			• And			<u> </u>
ļ		an AG. Volks	• < 35° C			<u>Detection</u> Pump V144,
	orisedby	Volkswagen Act	• Altitude < 2,700.0 m <sup>t</sup> ouarant			Checking (4 Pin)", page 706
	es autho.		O2S front ready	0,-20		
Stoniite Sepinari	July 3	Vehicle	<ul> <li>EVAP purge valve comman- ded off</li> </ul>	or accept and liability		
. 200 .	Vehicle Speed	<ul> <li>Vehicle speed &lt; 6</li> </ul>	• Engine speed > 2,800 RPM	• 10.5 \$2	• 2 DCY	<ul> <li>Check the vehicle</li> </ul>
% cle	Plausibility	km/h	Engine torque >	Multiple		speed sig- nal. Refer to
sor			Vehicle speed		to the C	⇒ V3.6.29 ehi- cle Speed
Circuit Rang e/			sensor no fault		orrectness	Signal, Checking", page 729
for-				on	Sofine	<ul><li>Check the CAN-Bus</li></ul>
e ocomus				nation in t		terminal re- sistance. Refer to
JENIO,	O BUILDOO WIBINGOO		• Vehicle speed sensor no fault	S. instruction of the state of		⇒ C3.6.4 AN- Bus Termi- nal Resist- ance,
	JUGUN OO	erv	MONKAMBING	»-		Checking", page 676



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0506 Idle Con- trol Sys- tem RPM - Lower Than Ex- pec- ted	Idle Controller Out Of Range Low	Engine speed deviation < -100 RPM     And     RPM controller torque value >= calculated max value.	Engine speed	• 7.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338. Checking", page 726 .  Check the Throttle Valve Control Module - GX3 / J338 GX3 / J338
P0507 Idle Con- trol Sys- tem RPM - High- er Than Ex- pec- ted	Idle Con- troller Out Of Range High	Engine speed deviation > 100 RPM     And     RPM controller torque value <= calculated min. value     Or     RPM controller P-portion and I-portion < -20.0 Nm	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> </ul>	arW		- Check the Throttle Valve Control Module - GX3 / J338-Refer to T3.6.28 hrottle Valve Control Module GX3 / J338. Checking", page 726.



POSO Cold Start A A A A A B A Control Sys- tem Per- for- manc e  Cold Start Monitoring Idle Con- trol Sys- tem Per- for- manc B Cold Start Monitoring Idle Con- trol Sys- tem Per- for- manc B Cold Start Monitoring Idle Con- trol Cold Start Multiple  Altitude <  Cold Start Multiple  Con- Trol Cold Start Multiple  Altitude <  Cold Start Monitoring Idle Con- Trol Cold Start Multiple Con- Trol Cold Start Multiple		
Cold Start Monitoring Idle Controller Out of Range High  RPM controller torque value <= calculated min. Value  RPM controller P-portion and I-portion < -20.0 Nm  RPM controller P-portion and I-portion < -20.0 Nm  RPM controller P-portion and I-portion < -20.0 Nm  RPM controller P-portion and I-portion <20.0 Nm  Time after engine start > 0.0 s ti	Cold Start Idle Controller Out of Range Low  New Yehicle speed 0 km/h  RPM controller torque value >= calculated max. value  RECT @ start < 143° C  Idle Controller Out of Range Low  New Yehicle speed 0 km/h  Altitude < 2,700.0 m  ECT @ start < 143° C  IAT > -48° C  External torque request not demanded  External torque request not demanded  Catalyst heating active  For manual transmission:  Engine speed idle  Nulltiple  Nulltiple  Nulltiple  Nulltiple  Nulltiple  Nulltiple  Nulltiple  Nulltiple  Nulltiple  Valve trol N  GX3  Reference  RPM  OGX3  Reference  Altitude < 2,700.0 m  ECT @ start < 143° C  External torque request not demanded  Catalyst heating active  For manual transmission:  Engine load <	ttle e Con- Module - / J338 er to  .28 hrot- alve erol Mod- 3X3 / b. cking",
3. Diagnosis and Testing	-20.0 Nm  -20.0	esting 3



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P052 A Cold Start "A" Cam- shaft Position Tim- ing Over- Ad- vance d Bank 1	Cold Start Monitoring VVT Actua- tor Intake Target Er- ror	Difference between target position vs. actual position > 10° CRK	<ul> <li>Time after engine start &gt;= 10.0 s</li> <li>Engine speed &gt;= 400 RPM</li> <li>Modeled oil temperature &gt;= -48° C</li> <li>Catalyst heating active</li> </ul>	• 5.0 s • Once / DCY	• 2 DCY	- Check engine oil for incorrect viscosity or in need of servicing (dirty oil). Oil that is not clear in color may be causing the sensor to operate incorrectly. The engine oil must be clean and of the correct viscosity in order for the sensor to operate properly. Check the vehicle paperwork to determine what oil viscosity has been used and when the last oil
	ES AUT	korised by Volkswagen A	G. Volkswagen AG does not	Quarantee or ac		change was performed. Change the engine oil if necessary.
poses, in part or in who,	Shing Island		• Time after en-	Celtia	A liability with respect to the correctness	- Check the Camshaft Adjustment Valve 1 - N205 Refer to ⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672.
PCM	Heater Front Out Of Range	measured calibration resistance in ECM and set value > 45.0	<ul> <li>Time after engine start &gt; 40.0 s</li> <li>Engine speed idle</li> </ul>	<ul><li>40.0 s</li><li>Multiple</li></ul>	• 2 Dr information in this go	<ul> <li>Replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.</li> </ul>
	Altitude Sensor Plausibility Check	• Signal gradient > 50.0	Olkewagen and	• 20.0 s		

		olised by Volkey	<sub>N</sub> agen AG. Volkswage <i>r</i>	nAG <sub>does not</sub> g <sub>ualfantes</sub> <b>Jetta</b> ,		/agen, Golf, Pas Scan Tool - Edit	
		uthor.		· Mee or	Generic	scan 1001 - Edit	ion 07.2022
Thos.	DTC / De- scrip-	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
in whole, is $n_{ m c}$			• Signal gradi- ent < -50.0 hPa		with respect t		
es, in part or		Altitude Sensor Short To Ground	• Signal volt- age < 0.20 V		• 0.2 s		
ocommercial purposes, in part or in whole, is holo		Altitude Sensor Short To Battery / Open Cir- cuit	• Signal voltage > 4.88 V		rectness of information in		
, , , , ,	BUHO1016	ECM: WDA Function Monitoring:	General cause failure		Continu		
	OHAO	WDA	<ul><li>Internal check failure.</li><li>Overvoltage</li></ul>	A negswaylo V Voltheinggo, ing	ous		
			check failure  Overvoltage  olioidetection failure	A nseswayloly.			
		ECM: EE- PROM Check	Check failed				
		ECM: Self Check For Sensor IC internal Hardware Check (Electrical Adjustment Communi- cation, Volt- age Sup- ply)	• Check				
		ECM: 5V Supply Voltage In- ternal Hard- ware Check	Under-/ overvoltage detection				
		ECM: A/D Converter Power-Up Calibration	Check failed	Initialization phase active			
		ECM: A/D Converter Adc-Cannel Conversion		<ul><li>Initialization phase active</li><li>Power-up calibration executed</li></ul>			
		ECM: EGAS Module Function Monitoring: A/D Con- verter	Comparison reference voltage with sensor volt- age incorrect				

Jetta, Jetta SportWagen, Golf, Passat 2010 → AG. Volkswagen AG. V

			, orise		40	to
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue		Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Test voltage check failed     Internal check failed				ditty with respect to t
	ECM: EGAS Module Function Monitoring: Torque	Comparison with allowed engine tor- que incorrect	Internal engine speed > 600 RPM			he correctness of in
	ECM: EGAS Module Function Monitoring: Engine Speed De- viation	Difference between cal- culated and internal en- gine speed > 320 RPM	Internal engine speed > 520 RPM			divinition respect to the correctness of information in this contract to the correctness of information in the correctness of information in this contract to the correctness of information in the correctness of information in the correctness of the correctness of information in the correctness of the correctness
	ECM: EGAS Module Function Monitoring: Coding	Internal check failed	Stilled Strainted on the straint of	g.	A nagswaylo V yd rhg	Mdo
	ECM: EGAS Module Function Monitoring: Ignition Timing					
	ECM: EGAS Module Function Monitoring: Intern	System re- action incor- rect				
	ECM: EGAS Module Function Monitoring: Injection Rate Limi- tation					
	ECM: EGAS Module Function Monitoring: Accelerator Position	Internal check failed				



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	ECM: EGAS Module Monitoring Module	<ul> <li>Function controller check failed</li> <li>And</li> <li>Monitoring module check no failure</li> </ul>	SPI - interface no failure  SPI - interface no failure  Interface no failure  Interface no failure  SPI - int	Joy Volkswagen A	.G. Volkswagen A.G	does not guarantee or acceptal
	CAN: Inter- nal Fault CAN Con- troller RAM Check	RAM error memory checksum error	Initialization phase     Time after ignition on 500.0 ms	• 0.0 ms • Once / DCY		
P0627 Fuel Pump "A" Con- trol Cir- cuit/ Open	Fuel Pump Relay Open Circuit  Fuel Pump Relay Short To Ground	<ul> <li>Signal voltage 4.50 – 5.50 V</li> <li>Signal voltage &lt; 3.0 V</li> </ul>	Pump relay commanded off  Table Engine speed >  Repurp relay commanded off  Pump relay commanded off  Pump relay commanded off	• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690
P0629 Fuel Pump "A" Con- trol Circuit High	Fuel Pump Relay Short To Battery Plus	Signal current 0.60 –     1.20 A	Pump rélay commanded on Bengine speed Sun RPM  Pump rélay commande de la command	• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Delivery Unity GX12/Fuel Pump Relay -J17 Refer to ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0638 Throt- tle Ac- tuator Con- trol Rang e/ Per- for- manc e Bank 1	Check Close Movement  Throttle Actuator Basic Settings Signal Range Check @ Mechanical Stop Low	<ul> <li>TPS 1 signal voltage not (0.40 – 0.80)</li> <li>Or</li> <li>TPS 2 signal voltage not (4.20 – 4.60)</li> <li>V</li> <li>Or</li> <li>TPS1 +</li> </ul>	<ul> <li>IAT &gt; -20° C</li> <li>Case 1:</li> <li>Ignition on</li> <li>Case 2:</li> <li>Engine shut-off-time 3.0 s</li> <li>Number of checks 2.0 [-]</li> <li>Engine speed 0 RPM</li> </ul>	• 0.3 s • Multiple	• 2 DCY  *eeofaceotanniahiin respective in ormation in this cool in the cool i	othe correctnes
P0641 Sen- sor Refer- ence Volt- age "A" Cir- cuit/ Open	ECM: Sensor Reference Circuit A Signal Range Check	• Signal voltage deviation > +/- 0.3	• Engine shut-off- time 3.0 s • ECT 5 – 115° C • IAT 5 – 143° C	0.5 s     Continuous	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sen- sor Refer-	ECM: Sen- sor Refer- ence Circuit B Signal Range Check	V		0.5 s     Continuous	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.
Sen- sor	ECM: Sensor Reference Circuit C Signal Range Check	Signal voltage deviation > +/- 0.3 V  V  Signal voltage deviation > +/- 0.3 V	y Volkswagen AG. Volkswag	O.5 s     Continuous  Gen AG does not g	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.
	mercial purposes, in part or	THO TO BE WAS THE WAS THE WAS	Protected by co	Valkewagened Valley	AGIUGUADO TUBUINDO SA	the correctness of information in the co



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P117 A Bank 1, Oxy- gen Sen- sor Cor- rec- tion Cen- ter Sen- sor Con- trol Limit Reach ed		I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - po		SA Nagen AG.	HON KONION KOO JUUUS	gen Sensor for Bank 1 Catalytic Converter - G465 Refer to  Catalytic Converter - G465 Refer to  Catalytic Converter G465. Checking (CBUA)".  Page 680  Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  Catalytic Converter - GX7 Refer to  Catalytic Converter GX7. Checking". Checking
P150 A En- gine Off Timer Per- for- manc e	Engine-Off- Time Com- parison Of Engine Off Time From Instrument Cluster Control Unit With En- gine After Run Time	Difference between engine-off-time and ECM after-run time < -12.0 s	<ul> <li>Key on after ECM after run time active</li> <li>CAN active</li> </ul>	• 6.0 s • Once / DCY	• 2 DCY	- If ignition off B+ is lost to ECM, this code will set. Check power and ground inputs to ECM first. Refer to Wiring Diagrams for pin locations. If all power/grounds to ECM are



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina-	Component Diagnostic Procedure
	n part or in whole, is not being.	Difference between en- gine-off-time and ECM af- ter-run time > 12.0 s	<ul> <li>Key on during ECM after run time active</li> <li>CAN active</li> </ul>		N. applity with respect to	to appropri- ate repair manual.
P2088 "A" Camshaft Position Actuator Control Circuit Low Bank	VVI Actuator Intake Short∏o Ground	TO SURGOO ROL			• 2 DCY	⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672 .
shaft	VVT Actuator Intake Short To Battery Plus	Signal cur- rent > 2.2 A	<ul> <li>Camshaft valve on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	Continuous	· ZDC1	- Check the Camshaft Position Sensor - G40 Refer to  ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.  - Check the Camshaft Adjustment Valve 1 - N205 Refer to ⇒ C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable	Monitoring MIL Illumina- Length tion Time	agnostic Proce- dure
P2096 Post Cata- lyst Fuel Trim Sys- tem Too Lean Bank 1	Fuel System Out Of Range	I-portion of 2nd lambda control loop < -0.040 [-] (CBTA)  I-portion of 2nd lambda control loop < -0.030 [-] (CBUA)	<ul> <li>Modeled exhaust gas temp. 400 – 1,000° C</li> <li>Exhaust gas mass flow 18.0 – 180.0 kg/h</li> <li>Lambda control closed loop</li> <li>Lambda control not at min or max limit</li> <li>2nd lambda control closed loop</li> <li>O2S front ready</li> <li>O2S rear ready</li> <li>O2S heater front active</li> <li>Fuel cut off not cative</li> <li>Catalyst heating not active</li> <li>SAI not active</li> </ul>	• 140.0 s • Multiple  • Augustion of the state of the sta	fer to fuel system mechanical testing in and/or to appropriate repair manual.  Check the Oxygen Sensor 1 After Catalytic

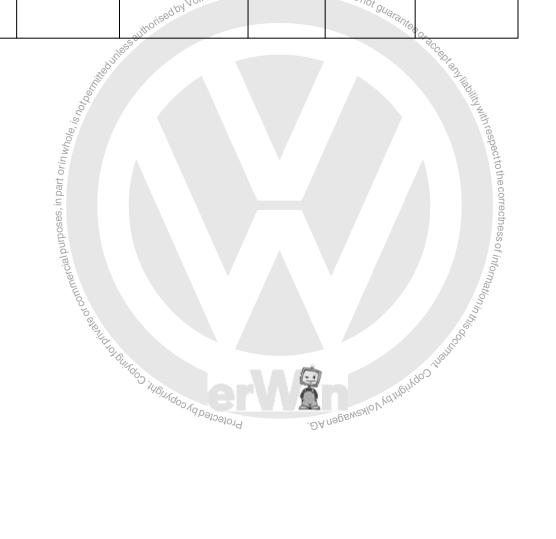


DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Post Cata- lyst Fuel Trim Sys- tem Too Rich Bank 1	Fuel System Out Of Range	I-portion of 2nd lambda control loop > 0.040 [-] (CBTA)  I-portion of 2nd lambda control loop > 0.030 [-] (CBUA)  CBUA)  Olkswagen AG. Volkswagen AG. Volks	Modeled exhaust gas temp. 400 – 1,000° C     Exhaust gas mass flow 18.0 – 180.0 kg/h     Lambda control closed loop     Lambda control not at min or max limit     2nd lambda control closed loop     O2S front ready     O2S rear ready     O2S heater front active     O2S heater rear active     Catalyst heating not active     SAI not active	140.0 s     Multiple     140.0 s     Multiple     O.5 s     Multiple	4. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
Tarot-	Throttle Ac-	throttle value angles vs calculated value > 4.0 – 50.0%	DA II GHEN 89 EN AG.	ng n	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	6
P2106 Throt- tle Ac- tuator Con- trol Sys- tem - Force	Circuit part or in wh	check	<ul> <li>Duty cycle &gt; 80.0%</li> <li>Or</li> <li>Deviation throttle value angle vs. calculated value &gt; 4.0 - 50.0%</li> </ul>	• 12.0 s • Multiple	• 2 DCY	Check the Throttle Valve Con- Trol Module - GX3 / J338 Refer to  3.6.28 hrot- tle Valve Control Mod-
Limi- ted Power	Throttle Ac- tuator Functional Check	Internal check failed				ule GX3 / J338, Checking", page 726
	Throttle Actuator Temperature / Current Monitoring	• Internal			OMGMOO TRAINGRAIN	
	tuator Short To Battery Plus / Short To Ground	check 40undo	Protected by	y Volkswagen AG	ambindo.	
Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "D" Circuit Low	Sensor 1 Out Of Range Low	• Signal volt- age < 0.6 V		Continuous		- Check the Accelerator Pedal Mod- ule -GX2- Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670
Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "D" Circuit High	Accelerator Position Sensor 1 Out Of Range High	Signal volt- age > 4.8 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2- Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.
Throt- tle/	Accelerator Position Sensor 2 Out Of Range Low	• Signal volt- age < 0.3 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to    → A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Throt- tle/ Pedal	Accelerator Position Sensor 2 Out Of Range High	• Signal volt- age > 2.4 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670
Throt- tle/ Pedal	Accelerator Position Sensor 1 And 2 Ra- tionality Check	• Signal volt- age sensor 1 vs. 2 > 0.167 – 0.703 V	<ul> <li>Signal voltage sensor 1 &gt; 445.0 mV</li> <li>Signal voltage sensor 2 &gt; 445.0 mV</li> </ul>	<ul> <li>0.5 s</li> <li>Continuous</li> <li>G. Volkswagen A</li> </ul>	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Sys- tem Too Lean	Fuel Sys- tem Too Lean @ Part Load	Adaptive val- ue > 28.0%	gine start n.a. • Engine speed 1,320 – 4,600	<ul><li>25.0 s</li><li>Multiple</li></ul>	• 2 DCY	Check the vacuum lines visually for leaks.	
Off Idle Bank 1			<ul> <li>RPM</li> <li>Engine load 25.0 <ul> <li>46.0%</li> </ul> </li> <li>Mass air flow</li> </ul>			Check the intake system visually for leaks (false air).	
			45.0 – 300.0 kg/h • ECT > 59° C • Or			Check the fuel pressure and delivery	
			<ul><li>Substitute ECT n.a.</li><li>IAT &lt; 85° C</li></ul>			quantity. Re- fer to fuel system me- chanical testing in	
			Ratio manifold pressure to ambient pressure > 0.20 [-]			C3.1 heck", page 14 and/or to appropriate re-	
			Or Valve overlap < 40° CRK			pair manual.  - Check the Fuel Injectors. Refer to	
			Lambda control closed loop     Evap purge valve closed	by Volkswagen A	.G. Volkswagen A.G	⇒ F3.6.13 uel o <sub>oos</sub> Injectors,	
			If low fuel signal			- Check the	O HIN WILL
			then wait and bound of the first of the second part of the second formal			Sensor 1 Before Catalytic Converter - GX10 Refer to  3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  - Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay	
			Jammos to aligning to file			-J1/ Refer 🕟	"Monin this
			140 <sup>71</sup>	Protected by cop.	.ĐAng	to ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						J17, Checking", page 690 .  - Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Sys- tem	Fuel System Too Rich @ Part Load	• Adaptive value < -28.0%	gine start n.a.  • Engine speed 1,320 – 4,600 RPM  • Engine load 25.0 – 46.0%		• 2 DCY  Volkswagen AG doe	page 694 .  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  D3.6.23 xy-gen Sensor 1 Before Catalytic Converter Catalytic Converter GX10, Checking", page 716 .	Tidolitty W.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						Manifold Sensor GX9, Checking", page 698  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688





De-	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions Ben AG. Volkswagen AG doe	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Cool- Sy ing Pe Sys- ar tem in Per- Pe for- ar	ng System erform nce Not In	• Thers 03: • Cooling system temperature to low after a sufficient air mass flow integral 75° C	<ul> <li>Integration when engine temp. 30° C</li> <li>Thers_02:</li> <li>ECT @ start -10 - 60° C</li> <li>AAT &gt; -10° C</li> <li>Fuel cut off not active</li> <li>And</li> <li>Engine load 14.0 - 95.0%</li> <li>Air mass_01:</li> <li>Integrated air mass depending on engine temp. at start and AAT 4.0 - 13.5 kg/h</li> </ul>	DCY	contain liability with respect to the correctness of information in this occurrence.	<ul> <li>Check the Engine Coolant Temperature Sensor G62 Refer to</li> <li>E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683</li> <li>Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to</li> <li>E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685</li> <li>Check the engine coolant thermostat. Refer to appropriate repair manual.</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2184 Engine Coolant Temperature Sensor 2 Circuit Low	Fan Control Coolant Tempera- ture Sensor Short To Ground	ECT outlet > 140° C  140° C	ed by Volkswagen AG. Volks	• 2.0 s • Continuous vagen AG does no	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685
gine Cool- ant	Coolant Tempera- ture Sensor Short To	-40° C		Continuous	nunci	Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to  3 6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83,
		146 J	Protected by Copyright	Kewagen AG.	OVENTINION JAR	



DTC / De- scrip- tion	Monitor Strategy Description	Threshold Val-	Secondary Parame- ters with Enable Conditions	Monitoring   Length  Time	MIL Illumina- tion	Component Diagnostic Procedure
P2187 Sys- tem Too	Fuel Sys- tem Too Lean @ Idle	Adaptive value > 5.02%	<ul> <li>Time after engine start n.a.</li> <li>Engine speed &lt; 860 RPM</li> </ul>	• 40.0 s • Multiple	• Co 2 DCY	Check the vacuum lines visually for leaks.
at Idle Bank 1	orin whole, is hot,		<ul> <li>Mass air flow &lt; 35.0 kg/h</li> <li>ECT &gt; 59° C</li> </ul>		• Cost and liability with respect to the co	Check the intake system visually for leaks (false air).
	reprivate or commercial purposes, in part		<ul> <li>Time after engine start n.a.</li> <li>Engine speed &lt; 860 RPM</li> <li>Mass air flow &lt; 35.0 kg/h</li> <li>ECT &gt; 59° C</li> <li>Or</li> <li>Substitute ECT n.a.</li> <li>IAT &lt; 85° C</li> <li>Ratio manifold pressure to ambient pressure to ambient pressure &gt; 0.20 [-]</li> <li>Or</li> <li>Valve overlap &lt; 40° CRK</li> <li>Delta part load adaptation ready</li> <li>Lambda control closed loop</li> <li>Evap purge valve closed</li> <li>If low fuel signal then wait until fuel consumption</li> </ul>		e correctness of information in this country.	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in  ⇒ C3.1 heck", page 14 and/or to appropriets re
		OHINGOO TUBINAGOO NA DOJ	40° CRK  Delta part load adaptation ready  Lambda control closed loop	EWEANO VELTABING	00 'Îg <sub>ar</sub>	propriate repair manual.  - Check the Fuel Injectors. Refer to
			Evap purge valve closed     If low fuel signal then wait until			F3.6.13 uel Injectors, Checking", page 694.
			fuel consumption n.a.			Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to
						⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
						- Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer to ⇒ F3.6.11 uel
						Delivery Unit GX1 / Fuel Pump Relay



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						J17, Checking", page 690 .  - Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .

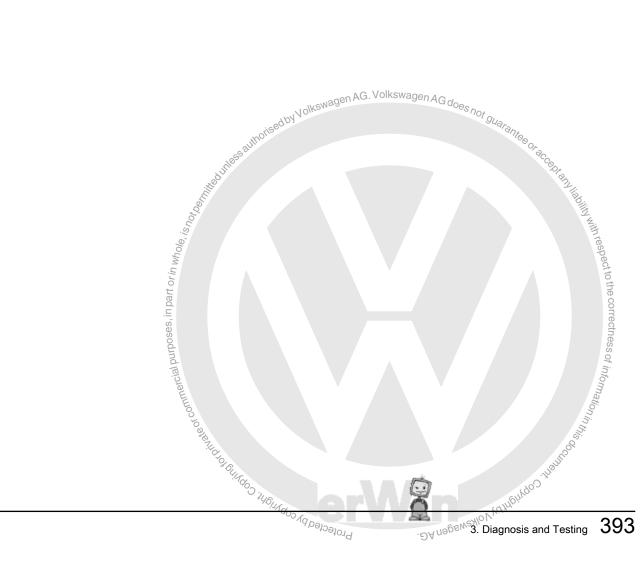




DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P2188 System Too Rich at Idle Bank 1	Fuel System Too Rich @ Idle	• Adaptive value < -5.02%	gine start n.a.			- Check the fuel pressure and delivery quantity Refer to fuel system mechanical testing in   C3.1 heck", page 14 and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to  F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay -J17 Refer to  F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690.  - Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refer to  Check the Intake Manifold Sensor - GX9 Refe	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						Manifold Sensor GX9, Checking", page 698
						<ul> <li>Check the EVAP Can- ister Purge Regulator Valve 1 - N80 Refer to</li> </ul>
						E3.6.10 VAP Canister Purge Regu- lator Valve 1 N80, Check- ing", page 688





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
02	Oxygen Sensors Front Out Of Range	Delta lambda of 2nd lambda control loop > 0.065 [-] (CBTA)     Delta lambda of 2nd lambda control loop > 0.070 [-] (CBUA)	<ul> <li>Modeled exhaust gas temp 400 – 1,000° C</li> <li>Delta engine load &lt; 12.0%</li> <li>Exhaust gas mass flow 18.0 – 180.0 kg/h</li> <li>Lambda control closed loop</li> <li>2nd lambda control closed loop</li> <li>O2S front ready</li> <li>O2S rear ready</li> <li>O2S neater front ready</li> <li>O2S heater front ready</li> <li>Catalyst heating not active</li> <li>Catalyst heating not active</li> <li>Case 1:</li> <li>1st lambda control loop not at min or max limit</li> <li>2nd lambda control loop active</li> <li>Case 2:</li> <li>1st lambda control loop at min limit</li> <li>O2S front &lt; 1.0 [-]</li> <li>O2S rear voltage</li> <li>0.4 V</li> <li>Case 3:</li> <li>1st lambda control loop at max limit</li> <li>O2S front &gt; 1.0 [-]</li> <li>O2S rear voltage</li> <li>0.6 V</li> </ul>	• Multiple	• 2 DCY  Volkswagen AG do	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  3 03.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.  - Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to  \$\frac{1}{2}\$ 3.6.11 uel Pump Relay -J17 Refer to  \$\frac{1}{2}\$ 1.6.11 uel Pump Relay -J17 Refer to  \$\frac{1}{2}\$ 1.6.15 ntake Manifold Sensor GX9 Refer to  \$\frac{1}{3}\$ 1.6.15 ntake Manifold Sensor GX9 Refer to	Triability with respect to the consess of Information in this of



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
De- scrip- tion	Strategy Description  Oxygen Sensors Front Out Of Range	teria and Threshold Val-	ters with Enable Conditions  Modeled exhaust gas temp 400 – 1,000° C  Delta engine load < 12.0%  Exhaust gas mass flow 18.0 – 180.0 kg/h  Lambda control closed loop  2nd lambda control closed loop  O2S front ready  O2S rear ready  O2S heater front	• 100.0 s • Multiple	• 2 DCY	agnostic Procedure  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  - O3.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716
		Copyright of the State of Commercial purposes,	<ul> <li>2nd lambda control loop active</li> <li>Case 2:</li> <li>1st lambda control loop at min limit</li> <li>O2S front &lt; 1.0 [-]</li> <li>O2S rear voltage &lt; 0.4 V</li> <li>Case 3:</li> <li>1st lambda control loop at max limit</li> <li>O2S front &gt; 1.0 [-]</li> <li>O2S rear voltage &gt; 0.6 V</li> </ul>	-ĐA nagawa	MONGHUDINGOO Juan	fold Sensor - GX9. Refer to Sensor GX9. Refer to Sensor GX9. Checking", Sensor GX9. Checking



DTC / Monitor De- Strategy scrip- Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2237 Oxygen O2 Sensors Sensors Front Open Circuit Positive Current Control Circuit/ Open Bank 1	<ul> <li>And</li> <li>Fuel cutoff &gt; 3.0 s</li> <li>O2S signal front 1.49 – 1.51 V</li> </ul>	<ul> <li>O2S ceramic temp &gt; 720° C</li> <li>Electrical adjustment not active</li> <li>Heater control closed loop</li> <li>Evap purge valve ready</li> <li>O2S ceramic temp &gt; 720° C</li> <li>Lambda modula-</li> </ul>	<ul><li>5.0 s</li><li>Multiple</li><li>6.5 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  3 03.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10,
Sen- sor 1	And     Delta lamb- da controller     > 0.10 [-]	tion > 0.02 [-]  Lambda control closed loop  Heater control closed loop			Checking", page 716
P2243 Oxygen O2 Sensors Front Open Circuit Nernst Voltage (UN) Voltage Circuit/ Open Bank 1 Sensor 1	• And	Heater control active  Heater control active  Modeled exhaust	<ul> <li>25.5 s</li> <li>Multiple</li> </ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to ⇒ O3.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P2251 Oxygen O2 Sensors Sensors Front Open Circuit Virtual Mass (VM) Current Control Circuit/ Open Bank	front 1.47 – 1.53 V • And	Modeled exhaust gas temp < 750 Ω  • tradul 's assodund report of the second of the s	35.5 0		- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking",



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2257 AIR Sys- tem Con- trol "A" Circuit Low		ocs, in part or in whole, is not to my in the part of in whole, is not to my in the part of in t	manded off <sub>G. Volks</sub> • Engine speed > 80 RPM	• 0.5 s		- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to \$\frac{1}{2}\$\$3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .
P2258 AIR System Control "A" Circuit High	Air Pump Relay Short To Battery Plus	Signal current 0.60 – 1.20 A	• Pump relay commanded on • Engine speed > 80 RPM	• 0.5 s • Continuous	O V VOTHEW GOD JASTIL	- Check the Secondary Air Injection Fump Relay J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719
O2 Sen- sor Signal Biase d/ Stuck	Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 30.0% En- richment) (CBTA)	O2S signal rear not os- cillating at reference < 600.0 mV	<ul> <li>Mass air flow 22.0 – 120.0 kg/h (CBTA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s (CBTA)</li> <li>2nd lambda control closed loop</li> </ul>	• 210.0 s (CBTA) • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.



DTC / De- scrip- tion	Strategy Description	Malfunction Cri- teria and Threshold Valage	Secondary Parameters with Enable an AG. Conditions G does	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Point - LSF Stuck Lean (If Sensor Stuck Lean: 20.0°- 30.0% Closed Loop En- richment) (CBUA)	saurhorises	<ul> <li>Mass air flow 30.0 – 120.0 kg/h (CBUA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 10.0 s (CBUA)</li> <li>2nd lambda control closed loop</li> </ul>	80.0 s (CBUA)     Multiple	containty with respect to the correctness of	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680
Biase d/	Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% En-	(CBTA)  O2S signal rear not oscillating at reference > 600.0 mV	<ul> <li>(CBTA)</li> <li>Mass air flow 22.0 – 120.0 kg/h (CBTA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s (CBTA)</li> <li>Fuel cut off &gt; 3.0° s</li> <li>2nd lambda control closed loop</li> </ul>	<ul> <li>210.0 s (CBTA)</li> <li>Multiple</li> </ul>	• 2 DCYSTOTMARION IN THIS COLUMN	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen Sensors Rear (Binary Check Of Response Time At Fuel Cut Off (CBTA)	<ul> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;=</li> </ul>	<ul> <li>(CBTA)</li> <li>Rich voltage (enable) &gt;= 548.0V</li> <li>Lean voltage &lt;= 191.0V</li> <li>O2S rear ready</li> <li>Rear O2-sensor signal oscillating</li> <li>Monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 Sensor Alambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>	• 6.0 s (CBTA) • Multiple  G does not guaran	tee of accept and liability with respec	and to the c
	Sensors Rear 2- Point -LSF Stuck Rich (If Sensor Stuck Rich: 7.0% - 15.0%	O2S signal rear not os- cillating at reference > 600.0 mV	<ul> <li>(CBUA)</li> <li>Mass air flow 30.0 – 120.0 kg/h (CBUA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 10.0 s (CBUA)</li> <li>Fuel cut off &gt; 3.0 s</li> <li>2nd lambda control closed loop</li> </ul>	• 80.0 s (CBUA) • Multiple	on the second se	Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
in part or in whole, is not being its properties of the state of the s	Oxygen Sensors Rear (Binary LSF) Check Of Response Time At Fuel Cut Off (CBUA)  Oxygen Sensors Rear 2 -	<ul> <li>(CBUA)</li> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0[-] olksvoltage from fuel cut off to O2 mass flow threshold &gt;= 4,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>(CBUA)</li> <li>Rich voltage (enable) &gt;= 548.0V</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2-sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>*geFront O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>	4.5 s (CBUA)     Multiple  Acceptant liability with respections	9,100 But of a	
Signal Biase d/ Stuck Lean	Stuck Lean (If Sensor Stuck Lean: 30.0% En-	reference < 600.0 mV	Mass air flow 22.0 – 120.0 kg/h     Modeled exhaust gas temp. > 350° C     O2S rear readiness > 30.0 s     2nd lambda control closed loop	• 210.0 s • Multiple •	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680



Fuel cut off active	DTC / De- scrip- tion	Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Lengthilks Time	MIL Illumina- vagen <b>tion</b>	Component Diagnostic Procedure
<ul> <li>7,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase)</li> <li>= 1.0 [-]</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>	P2275 O2 Sensor Signal Biase d/ Stuck Rich Bank 1 Sen-	Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% En- leanment) If Enlean- ment Is Not Successful: Waiting For Next Fuel Cut Off Oxygen Sensors Rear (Bina- ry LSF) Check Of Response Time At Fuel Cut	O2S signal rear not oscillating at reference > 600.0 mV      Response time at fuel cut off > 6.0 s      And     Measurement range from fuel cut off to voltage threshold <= 191.0 mV      And     Number of checks (initial phase) >= 1.0 [-]      Or     Measurement range from fuel cut off to O2 mass flow threshold >= 7,000.0 mg      And     Number of checks (initial phase)     And     Number of checks (initial phase)	<ul> <li>Mass air flow 22.0 - 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s</li> <li>Fuel cut off active</li> <li>2nd lambda control closed loop</li> <li>Rich voltage (enable) &gt;= 548.0V</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;=</li> </ul>	<ul><li>Multiple</li><li>4.5 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
MAP/ MAF - Throt-		Offset value throttle mass flow > 13.0 kg/h  Additional throttl				any engine gaskets that can cause additional air to enter the crankcase can set this fault as the PCV system is not metered. If a vacuum leak or crankcase seal is the cause, the dle may be stable



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	r in whole, is,				th respecti	lator Valve 1 N80, Check- ing", page 688
P2300 Ignition Coil "A" Primary Control Circuit Low	Ignition Coils Short To Ground	Signal current > 24.0 mA  A  A  A  A  A  A  A  A  A  A  A  A	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	Check the Ignition Coils with Power Output Stage. Refer to    3.6.14 gnition Coils With Power Output Stage. Checking",
P2301 Ignition Coil "A" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal voltage > 5.1 – 7.0 mÅ	• Engine speed 680 RPM	• 0.5 s • Continu <sup>©</sup> ous	190-	page 696 .  - Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696 .
P2303 Ignition Coil "B" Primary Control Circuit Low	Ignition Coils Short To Ground	Signal cur- rent > 24.0 mA	• Engine speed > 680 RPM	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P2304 Ignition Coil "B" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2306 Ignition Coil "C" Primary Control Circuit Low	Ignition Coils Short To Ground	Signal current > 24.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking",
P2307 Ignition Coil "C" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous AG.  OKSWAGEN AG.	• 2 DCY /olkswagen A G doe	page 696 .  - Check the Ignition Coils with Power Output  To Stage. Refer to Stage. Refer tion Coils With Power Output Stage.  Checking", page 696 .
P2309 Ignition Coil "D" Primary Control Circuit Low	Ignition Coils Short To Ground	rent > 24.0 mA	Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P2310 Ignition Coil "D" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to 3.6.14 gnition Coils With Power Output Stage, Checking", page 696.



DTC /	Monitor	Malfunction Cri-	Secondary Parame-	Monitoring	MIL Illumina-	Component Di-
De- scrip- tion	Strategy Description	teria and Threshold Vale ue	ters with Enable Conditions	Length Time	tion	agnostic Proce- dure
P2312 Igni- tion Coil "E" Pri- mary Con- trol Circuit Low	Ignition Coils Short To Ground	• Signal current > 24.0 mA  max or part or par	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Powers Output Stage, Checking page 696
P2313 Igni- tion Coil "E" Pri- mary Con- trol Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.15- 7.0 mA	• Engine speed > 680 RPM	• 0.5 s • Continuous	A negswello V vaing	- Check the Ignition Coils with Power Output Stage. Refer to ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P2400 EVAP Sys- tem Leak De- tec- tion Pump Con- trol Cir- cuit/ Open	LDP Open Circuit	• Signal volt- age > 4.40 – 5.60 V	<ul> <li>LDP commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2401 EVAP Sys- tem Leak De- tec- tion Pump Con- trol Circuit Low	LDP Short To Ground	• Signal volt- age < 2.15 – 3.25 V	<ul> <li>LDP commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
EVAP Sys- tem Leak De- tec- tion Pump Con- trol Circuit High	LDP Short To Battery Plus	Signal current > 3.0 A  Signal current > 3.0 A  Rivers authorised by Volker  And Signal current  The	LDP commanded on     Engine speed > 80 RPM  Nagen AG. Volkswagen AG.  AG. Volkswagen AG.  AG. Volkswagen AG.  AG. Volkswagen AG.	0.5 s     Continuous  Oes not guarantee	2 DCY  A acceptant liability with respect to the corre	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Reed Sensor Rationality Check Unable To Close	Low signal voltage > 0.5 s  High signal  High signal	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>Integrated purge flow &gt; 29.90 g</li> <li>Restart temperature difference &gt; 52 K</li> <li>Vehicle speed &gt;= 0 km/h</li> <li>Selected gear any drive</li> <li>Evap purge valve ready</li> <li>LDP commanded off</li> </ul>	• 0.5 s • Once / DCY	* 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
EVAP Sys- tem	sor Ration- ality Check Unable To	High signal voltage > 12.0 s  And  Number of checks 30.0 [-]  Augusto 1464 Augusto	Time after engine start 12.0 – 1,200.0 s  Proceeding on	• 12.0 s • Once / DCY	• 2 DCY • 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions AG.	Monitoring Length <sup>Olks</sup> Time AG <sub>Q</sub>	MIL Illumination	Component Diagnostic Procedure
		Cumulative time of high signal voltage during pumping > 10.0 s	Vehicle speed ones > 30 km/h     Selected gear any drive     Evap purge valve closed, ready     LDP commanded on	• 120.0 s • Once / DCY	wantee or de	Cody and liability with respect to
P240 A EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Cir- cuit/ Open	EVAP Leak Detection Pump Open Cir- cuit	• Signal volt-	• Evap pump heater commanded off	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ≥ L3.6.18 eak Detection Pump V144, Checking (3 Piny, page 704, or  23.6.19 eak Detection
P240 B EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Circuit Low	EVAP Leak Detection Pump Short To Ground	• Signal volt- age < 2.74 – 3.26 V	Evap pump heat- er commanded off	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P240 C EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Circuit High	EVAP Leak Detection Pump Short To Battery Plus	Signal current > 2.2 - 4.0 A  Signal current > 2.2 - 4.0 A  A  Signal current > 2.2 - 4.0 A	Evap pump heat- er commanded on  AG. Volksn  ad by Volkswagen AG. Volkswagen AG. Volksn  ad by Volkswagen AG. Volkswagen AG. Volksn  ad by Volkswagen AG. Volkswag	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  \( \begin{align*} \text{ L3.6.18 eak} \\ \text{ Detection} \\ \text{ Pump V144,} \\ \text{ Checking (3)} \\ \text{ Pin)", page} \\ \text{ Checking (4)} \\ \text{ Pin)", page} \\ \text{ Checking (4)} \\ \text{ Pin)", page} \\ \text{ 206} \text{ , as applicable.} \end{align*}
		Copyright of the purposes, in part of in why commercial purposes, in part of in which the part of in the par	• Evap pump heater commanded on	кемвови Р. С.	ON MOINDINGO THAINE	pispect to the correctness of information in this of



DTC / Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2407 EVAP Detection System Pump Signal Check Leak During Engine Off tection Pump Sense Circuit Intermittent/ Erratic	<ul> <li>Fluctuation of evap pump current during reference measurement &gt; 1 mA</li> <li>Or</li> <li>Drop of evap pump current during pump phase &gt; 6 mA</li> <li>For time &gt;= 3.0 s</li> </ul>	<ul> <li>Engine temperature @ engine start &gt;= 4° C</li> <li>Difference between ECT and IAT @ engine start &lt;= 15 K</li> <li>Ambient air temperature &lt; 35; &gt; 4° C</li> <li>Altitude &lt;= 2700 m</li> <li>Time since engine start in preceding dcy &gt;= 600.0 s</li> <li>Change in battery voltage during monitoring &lt; 1.0 V</li> <li>Engine off time &gt;= 5.0 s</li> <li>Vehicle speed 0 km/h</li> <li>Evap purge adaptation &lt; 5.0 [-]</li> <li>Deviation of filtered evap pump current during reference measurement within range &lt;= 1 mA</li> <li>Change in relative evap pump current during monitoring n.a.</li> <li>Within time n.a.</li> <li>(During ECM keep alive-time after ignition off, max. time) &lt; 900.0 s</li> <li>Airbag not activated</li> <li>(After MIL illumination because of any EVAP leakage the monitor is only at itority at devery) 1 dcys</li> </ul>	• 800.0 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2414 O2 Sen- sor Ex- haust Sam- ple Error Bank 1 Sen- sor 1	Sensors Front Sig- nal Range Check	<ul> <li>Threshold 1:</li> <li>Signal voltage 3.10 – 4.77 V</li> <li>Threshold 2:</li> <li>Signal voltage 2.50 – 3.06 V</li> <li>Depending on gain factor that actual is used for sensor</li> </ul>	oise 16 [-]	• 15.0 s do	es not guarantes or act	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 7.16.
P2431 AIR System Air Flow/ Pressure Sensor Circuit Rang e/ Performanc e Bank 1	Air System Pressure Sensor Ra- tionality Check	Difference     between SAI     pressure     and ambient     pressure not     (-60.0 –     60.0 hPa	• SAI done	• 0.5 s • Once / DCY	· 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to \$3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.
P2432 AIR System Air Flow/ Pressure Sensor Circuit Low Bank 1	Air System Pressure Sensor Sig- nal Range Check	Signal volt- age < 0.5 V		• 0.5 s • Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.
P2433 AIR Sys- tem Air Flow/ Pres- sure Sen- sor Circuit High Bank 1	Air System Pressure Sensor Sig- nal Range Check	Signal voltage > 4.5 V		0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 eco ndary Air Injection Sensor 1 G609, Checking", page 721.



Valve Stuck Open Bank 1  SAI pressure sensor ready  SAI pressure sensor ready  S3.6.26 econdary Air Injection Solenoid Valve N112. Checking", page 723.  Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  S3.6.24 econdary Air Injection Pump Motor -V101 Refer to	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
AG. Volkswagen AG does not guarante de doy Notes agent de doy Notes ag	AIR System Switc hing Valve Stuck Open Bank	Check After	measured with SAI pressure sensor vs. modeled while SAI valve closed	<ul> <li>IAT 5 – 100° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>SAI pressure sensor ready</li> </ul>	• Once / DCY		Secondary Air Injection Solenoid Valve - N112 Refer to  \$\frac{3}{3}.6.26 \text{ eco} \text{ ndary Air Injection Solenoid Valve N112, Checking", page 723}.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  \$\frac{3}{5}.6.24 \text{ eco} \text{ ndary Air Injection} \text{ ndary Air Injection}
mmercial purposes, in part or in whole, is not possible to the purposes, in part or in whole, is not possible to the purposes of the purposes				orised by Volkswager	AG. Volkswage	IAG does not guaran	Secondary Air Injection Pump Motor V101, Checking", page 719
412 Rep. Gr.ST - Generic Scan Tool	412		or commercial purposes, in part or in whole, is not permitted.	Taling Saluth Control of the Saluth Control		M negswe wo V d M	e of accept any liability with respect to the correctness of information in this operation in this operation in this operation in the operatio



<sup>t</sup> porpus	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
ommercial purposes, in part or in whole, is not being.	P2450 EVAP System Switching Valve Performance/ Stuck Open		Evap pump current difference between reference measurement to idle <= 3 mA	<ul> <li>Conditions</li> <li>Engine temperature @ engine start &gt;= 4° C</li> <li>Difference between ECT and IAT @ engine start &lt;= 15 K</li> <li>Ambient air temperature &lt; 35; &gt; 4° C</li> <li>Altitude &lt;= 2,700 m</li> <li>Time since engine start in preceding dcy &gt;= 600.0 s</li> <li>Change in battery voltage during monitoring </li> </ul>	Time  • 13.5 s • Once to the correctness of information in this occasion.	• 2 DCY	
		.4/Də <sub>l</sub> ə <sub>l</sub> ə	Proid .DA	েচব!:0 V • Engine off time >= 5.0 s			
				Vehicle speed 0 km/h			
				• Evap purge adaptation < 5.0 [-]			
				<ul> <li>No sudden change in evap pump current (filling event) &lt; 2;</li> <li>-1 mA</li> </ul>			
				Deviation of fil- tered evap pump current during reference meas- urement within range <= 1.0 mA			
				Change in rela- tive evap pump current during monitoring n.a.			
				Within time n.a.			
				(During ECM keep alive-time after ignition off, max. time) < 900.0 s			
				<ul> <li>Airbag not acti- vated</li> </ul>			
				(After MIL illumi- nation because of any EVAP leakage the mon-			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length	MIL Illuming- tion	Component Diagnostic Procedure
			itor is only activa- ted every) 1 dcys			0,
P2626 O2 Sensor Pumpi ng Current Trim Circuit/ Open Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Ad- justment Voltage (IA)	• O2S signal front > 4.77 V	Modeled exhaust temp. 750° C     O2S ceramic temp. > 720° C     Fuel cut off active     Heater control closed loop     If low fuel signal then wait > 0.0 s	<ul><li>2.0 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ O3.6.23 xygen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P3081 Engine Coolant Temperature Sensor 1 Circuit Rang e/ Performanc e	Engine Coolant Tempera- ture Sensor Rationality Measured Engine Coolant Temp. Be- low Refer- ence Model	<ul> <li>Range_01:</li> <li>Measured engine coolant temp. not within in a range of the reference model</li> <li>11 K</li> </ul>	Modmax_01:     Maximum refer-	• 4.0 s • Multiple	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor -G62 Refer to  E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.
High	Bus Read- ing Back Sent Mes- sage (Pow- ertrain)	CAN message no feedback	Time after ignition on 500.0 ms	<ul> <li>250.0 ms</li> <li>Continuous</li> </ul>	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
U000 2 High Speed CAN Com- muni- cation Bus Per- for- manc e	CAN: CAN- Bus CAN Communi- cation Check (Power- train)	Global time out receiving no message	Time after ignition on 500.0 ms	450.0 ms     Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance. Checking", page 676.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U010 1 Lost Com- muni- cation with TCM		Received CAN mes- sage no message	Time after ignition on 500.0 ms	• 500.0 ms • Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance between the Transmission Control Module to the Engine/ Motor Control Module - J623 Refer to  ⇒ C3.6.5 AN-Bus Terminal Resistance, Powertrain, Checking", page 678.
U012 1 Lost Communication With Anti- Lock Brake System (ABS) Control Module "A"	CAN: Brake Unit CAN Communi- cation With Brake Unit	Received CAN message no message  Market	Time after ignition on 500.0 ms  Time after ignition on 500.0 ms  Time after ignition after ignition of 500.0 ms	• 440.0 ms • Continu- olkswagen AG of	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance. Checking", page 676.
U014 6 Lost Com- muni- cation With Gate- way "A"	way CAN Communi-	©CAN mes- sage no	• Time after ignition on 500.0 ms	ms • Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.64 AN-Bus Terminal Resistance, Checking",
	,	40JBIHAL	Protected by copyright; C	.9Ansg	EWSMOVEON OIKSWE	Journ The Control of



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Vale ue	Secondary Parame- ters with Enable Conditions	Monitoring Length ∕்≀ Time	MIL Illumina- tion	Component Diagnostic Procedure
U015 5 Lost Communication With Instrument Panel Cluster (IPC) Control Module	ment Cluster Module ter Module in bart or in Mart or in	Received     CAN message no     message	Time after ignition on 500.0 ms	<ul> <li>500.0 ms</li> <li>Continuous</li> </ul>	• 2 DCV	Refer to  ⇒ C3.6.4 AN- Bus Terminal Resist- ance, Checking", page 676 .
U030 2 Soft- ware In- com- pati- bility With Trans- mis- sion Con- trol Mod- ule		Received AT vehicle data TCM signal	• Time after ignition on 500.0 ms		KQJUBUJADO HBUJADO	Check for software updates and TSB's. Reprogram as necessary. If none are found, replace the Transmission Control Module. Refer to appropriate repair manual.
U040 2 Invalid Data Re- ceived From TCM	CAN: TCM CAN Com- munication With TCM	Received data implausible message	Time after ignition on 500.0 ms	<ul> <li>60.0 ms</li> <li>Continuous</li> </ul>	• 2 DCY	<ul> <li>Check for software up- dates and TSB's. Re- program as necessary. If none are found, re- place the Transmis- sion Control Module. Re- fer to appro- priate repair manual.</li> </ul>
	CAN Com- munication With Vehi-	<ul> <li>Speed sensor signal: initialization error 327.08 km/h</li> <li>Speed sensor signal: low voltage error 327.25 km/h</li> </ul>		• 1,980.0 ms	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.  - Check the vehicle



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue gen AG.	Secondary Parameters with Enable Conditions  'olkswagen AG dogs n	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Mod-unbart or in whole, is not a seen in part or in whole, is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in whole is not a seen in part or in the seen in the se	CAN: Brake Unit CAN Communication With Brake Unit	<ul> <li>Speed sensor signal: sensor error 327.42 km/h</li> <li>Vehicle speed &gt;= 325 km/h</li> <li>Speed sensor signal: out of range 326.39 km/h</li> </ul>	not guan	Continuous  2,100.0 ms  Continuous  480.0 ms  Continuous  Continuous	with respect to the correctness of information	speed signal. Refer to  ⇒ V3.6.29 ehicle Speed Signal, Checking", page 729.
commercial pu	CAN: Brake Unit CAN Communi- cation With Brake Unit	Received data implau- sible mes- sage	Time after ignition on 500.0 ms	60.0 ms     Continuous	of information i	
2 Invalid Data Re- ceived	ent Air Tempera- ture Sensor Communi- cation With Instrument Cluster Module	• Ambient temperature value (initialization) 0.0 h	<ul> <li>Key on</li> <li>Status ambient temperature from instrument clus- ter no fault</li> <li>Electrical check ambient temper- ature sensor no fault</li> </ul>	• 3.0 s	2 DCY	<ul> <li>Check for software up- dates and TSB's. Re- program as necessary. If none are found, re- place the Body Control Module. Re- fer to appro- priate repair manual.</li> </ul>
Data Re- ceived From Instru-	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	Received CAN mes- sage implau- sible mes- sage	Time after ignition on 500.0 ms	600.0 ms     Continuous	• 2 DCY	<ul> <li>Check for correct soft- ware version and VIN or update soft- ware for the IPC Module if available.</li> </ul>
ment Panel Clus- ter Con- trol Mod- ule	CAN: Ambient Air Temperature Sensor Communication With Instrument Cluster Module (CBTA)	Ambient temperature value (initial- ization) 0.0 h [-]	<ul> <li>Key on</li> <li>Status ambient temperature from instrument clus- ter no fault</li> <li>Electrical check ambient temper- ature sensor no fault</li> </ul>	• 3.0 s • Multiple		If OK, re- place the In- strument Cluster Con- trol Module - J285 Refer to appropri- ate repair manual.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
7		Received data implau- sible mes- sage	Time after ignition on 500.0 ms	<ul><li>300.0 ms</li><li>Continuous</li></ul>	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.

## Engine/Motor Control Module, 2013 MY 3.4.4

DTC / De- scrip- tion	Strategy Description	ue 55°	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P000 A "A" Cam- shaft Posi- tion Slow Re- spons e Bank 1	VVT Actuator Intake Slow Response	Difference between target position > 8 - 12° CRK (CBTA)     Difference between target position > 8° CRK (CBUA)     And     Adjustment angle > 3° CRK     CRK	<ul> <li>Time after engine start &gt; 1.5 – 3.0 s</li> <li>Engine speed 600 – 6,320 RPM</li> <li>Oil temperature –48 – 143° C</li> <li>Frequency (normal operation) 7.0 times [-] (CBTA)</li> <li>Frequency (normal operation) 4.0 times [-] (CBUA)</li> <li>Or (CBTA)</li> <li>Frequency (CSM) 1.0 times [-] (CBTA)</li> </ul>	• 21.0 (CBTA) • 12.0 s (CBUA) • Multiple		Check the Camshaft Adjustment Valve 1 - N205 Refer to C3.6.2 amshaft Adjustment Valve 1 N205 Checking", page 672.  Check the Camshaft Position Sensor - G40 Refer to C3.6.3 amshaft Position Sensor G40, Checking", page 674.  Check the Engine Speed Sensor -G28 Refer to E3.6.9 ngine Speed Sensor G28, Checking", page 686.



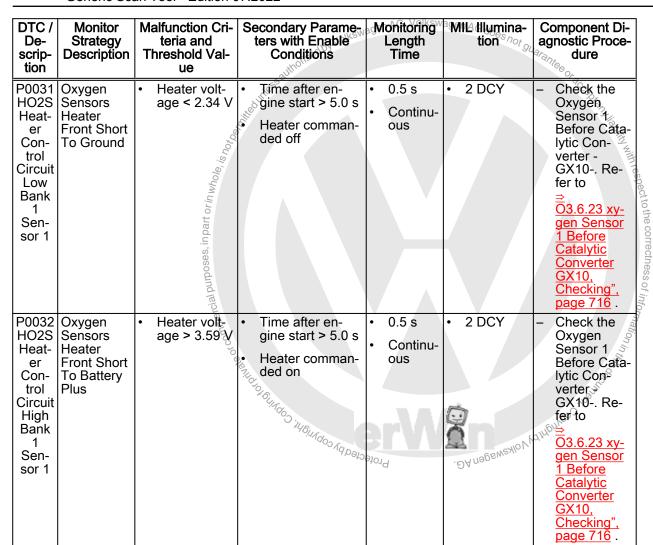
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
"A" Cam- shaft Posi- tion Actua- tor "A" Con- trol Cir- cuit/ Open Bank 1	VVT Actuator Intake Open Circuit	• Signal voltage > 4.40 – 5.60 V	Camshaft valve off  Engine speed > 80 RPM  gen AG. Volkswagen AG doe	• 0.5 s • Continuous	• 2 DCY	- Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672.  - Check the Engine Speed Sensor -G28 Refer to ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686.  - Check the Camshaft Position Sensor -G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.
	of private or commercial purposes, in	EliAdo HoliNdos Kaposos	3019 - DA riegge	MEMO V VOTINITION	the correctness of information in this document.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0011 "A" Cam- shaft Posi- tion - Tim- ing Over- Ad- vance d or Sys- tem Per- for- manc e Bank 1	VVT Actuator Intake Target Er- ror	audle CKK  * 3	<ul> <li>Time after engine start &gt; 1.5 – 3.0 s</li> <li>Engine speed 600 – 6,320 RPM</li> <li>Oil temperature –48 – 143° C</li> <li>Frequency (normal operation) 7.0 times [-] (CBTA)</li> <li>Frequency (normal operation) 4.0 times [-]</li> <li>Or (CBTA)</li> <li>Frequency (CSM) 1.0 times [-] (CBTA)</li> </ul>	kswagen AG doe		Speed Sensor G28, Checking", page 686.  - Check the Camshaft Position Sensor - G40-Refer to C3.63 amshaft Position Sensor G40 Checking", page
		Service College	Protected by copyrights	.ĐA nagsv	за, Соридиру Окел	J. J



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Crank shaft	Camshaft Position Sensor In- let Angular Offset Check	<ul> <li>Permissible deviation &lt; -13.5° CRK</li> <li>Or</li> <li>Permissible deviation &gt; 13.5° CRK</li> </ul>		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sen- sor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sen- sor G28, Checking", page 686.
Sen- sor A						- Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 amshaft Position Sensor G40, Checking" page
	art orin whole, is not bemitten	unless authorised by Volks	• Time after en-	loes not guarantes	o acceptand liability with respect to the c	ing", page 674 .  - Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672 .
HO2S	Sensors Heater Front Open	• Heater voltage 2.34 – 3.59 V	<ul> <li>Time after engine start &gt; 5.0 s</li> <li>Heater commanded off</li> </ul>	• 0.5 s • Continuous	• 2 DCY • 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.

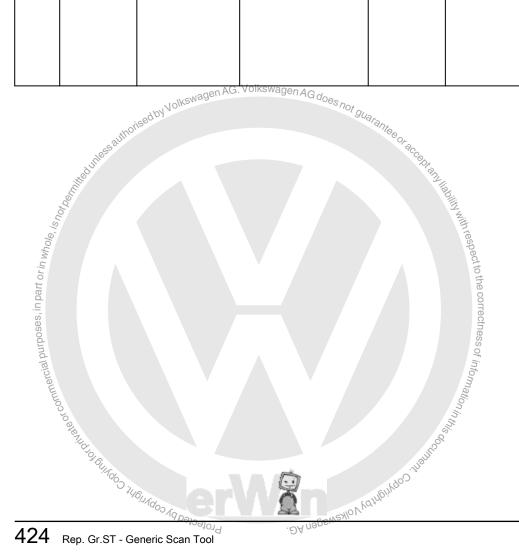




DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er	Oxygen Sensors Heater Rear 2 - Point - LSF Open Cir- cuit	Heater voltage 4.50 – 5.50 V	<ul> <li>Engine speed &gt; 80 RPM (CBTA)</li> <li>Time after engine start &gt; 5.0 s (CBUA)</li> <li>Heater commanded off</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to  3 03.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.  - Check the Center Oxy- gen Sensor
		or in whole, is no.	Some difficulties authorised by Volks	wagor	J. N. does not	tor Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680
		oses, in	Shoelenida dinkdoo ya Gundoo Kape			Checking (CBUA)", page 680.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0037 HO2S Heat- er Con- trol Circuit Low Bank 1 Sen- sor 2	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Ground	• Heater voltage < 3.0 V	<ul> <li>Engine speed &gt; 80 RPM (CBTA)</li> <li>Time after engine start &gt; 5.0 s (CBUA)</li> <li>Heater commanded off</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S Heat- er Con- trol	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Battery Plus	Heater current 2.70 –     5.50 A	<ul> <li>Engine speed &gt; 80 RPM (CBTA)</li> <li>Time after engine start &gt; 5.0 s (CBUA)</li> <li>Heater commanded on</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to   ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .
			sunes authorised by Volkswage	n AG. Volkswage	an AG does not gu <sub>alfal</sub>	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2S	Oxygen Sensors Heater Rear 2 - Point - LSF Open Cir- cuit	• Heater voltage 4.50 – 5.50 V	Engine speed > 80 RPM     Heater commanded off  /olkswagen AG does not gua	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.
commercial purposes, in part or in whole, is nos.		5.50 V	Engine speed > 80 RPM     Heater commanded off  /olkswagen AG does not gua		with respect to the correctness of information in the	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.
	THO O 146	Protected by copyrig	DA Volkewagen AG.	MONGO Hantoo		



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Ground	• Heater voltage < 3.0 V	Engine speed > 80 RPM     Heater commanded off  Makewagen AG. Volkswagen Ag.	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to converter - G465 Refer to converter - G465 Refer to converter - G465 Checking (CBUA)", page 680.
	o s	Bellid of Elikatoo HENAdoo Ac	Protected D	Mph Nolkswagen	divideo ingindagini	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion AG. Volkswagen AC	Component Diagnostic Procedure
P0044 HO2S Heat- er Con- trol Circuit High Bank 1 Sen- sor 3		Heater current 2.70 –     5.50 A	Engine speed > 180 RPM     Heater commanded on the speed on the speed on the speed of the s	• Continu-	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.
			Heater commanded on the common of the c	Joo va bestoelo propio	.9An	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.
Ambi-	Ambient Air Tempera- ture Sensor Short To Battery / Open Cir- cuit	• Ambient air temperature < -50° C	CAN active	• 6.0 s • Multiple	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  → O3.6.21 ut- side Air Temperature Sensor G17. Checking". page 711.  - Check the CAN-Bus terminal re- sistance. Refer to  → C3.6.4 AN- Bus Terminal Resist- ance, Checking". page 676.



DTC / Monitor De- Strategy scrip- tion Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Rang e/ Per- for- manc e	<ul> <li>Diff. ECT vs. IAT at engine start (depending on engine off time) &lt; 24.75° C</li> <li>And</li> <li>Diff. IAT vs. AAT at engine start (depending on engine off time) &gt; 24.75° C</li> <li>And</li> <li>Diff. AAT vs. ECT at engine start (depending on engine off time) &gt; 24.75° C</li> <li>And</li> <li>Diff. AAT vs. ECT at engine start (depending on engine off time) &gt; 24.75° C</li> </ul>	<ul> <li>Time after engine start 2.0 s</li> <li>Or</li> <li>Diff. ECT vs. ECT outlet &lt;= 20° C</li> <li>Time after engine start 2.0 s</li> <li>Solar radiation case 1:</li> <li>AAT @ start &lt;= 2° C</li> </ul>		• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  ⇒ O3.6.21 ut- side Air Temperature Sensor, G17, Checking page 711. Checking page 711	Strand liability



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	20.
Ambient Air Temperature Sensor Circuit "A" Low	Ambient Air Tempera- ture Sensor Short To Ground	Ambient air temperature > 87° C	CAN active      CAN active  Time after engine start n.a.	• 6.0 s • Multiple	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  3.6.21 utside Air Temperature Sensor G17, Checking", page 711 .  - Check the CAN-Bus terminal resistance. Refer to  3.6.4 AN-Bus terminal resistance. Refer to  3.6.4 AN-Bus terminal Resistance. Refer to  4.5.4 Checking", page 676 .	300
Manifold Absolute Pressure/ Barometric Press	Manifold Pressure Sensor Ra- tionality Check Low	Difference manifold pressure - lower threshold model < 0.0 hPa     Model range 0.0 - 800.0 hPa	Time after engine start n.a.	<ul><li>450.0 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Mod-	
sure Sen- sor Circuit Rang e/ Per- for- manc e	Manifold Pressure Sensor Ra- tionality Check High	Difference manifold pressure - lower threshold model > 0.0 hPa     Model range 650.0 - 1,080.0 hPa				ule GX3 / J338, Checking", page 726 .  - Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake	
	Manifold Pressure Sensor Ra- tionality Check	Diff. altitude sensor sig- nal vs. mani- fold pressure signal at en- gine start > 60.0 hPa	<ul> <li>Time after engine start &lt; 25.0 s</li> <li>Engine speed &lt; 330 RPM</li> </ul>			Manifold Sensor GX9, Checking", page 698	
	Manifold Pressure Sensor Adaptation Value Mon- itoring	Offset value manifold pressure for load calcula- tion in driv- ing condition range 2.0 > 55.0 hPa	<ul> <li>Driving condition range 1 (omsna):</li> <li>Engine speed &lt; 800 RPM</li> </ul>				

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Offset value manifold pressure for	Desired mass flow 5.0 – 25.0 kg/h			
		load calcula- tion in driv- ing condition range 2.0 <	Delta adaptation value range 1.0 < 0.10 kg/h			
		-60.0 hPa	For time 1.0 s			
			Driving condition range 2 (opsra):			
			• Engine speed > 1,400/RPMIKSwage	n AG does p		
		authorisedby	<ul> <li>Manifold pres- sure &lt; 425.0 hPa</li> </ul>	Tot 946	rantee or	
		Soliting duntes sauthorized by	<ul> <li>Driving condition range 2 (opsra):</li> <li>Engine speed &gt; 1,400 RPM lkswage</li> <li>Manifold pressure &lt; 425.0 hPa</li> <li>Delta adaptation value range 2.0 &lt; 2.97 hPa</li> <li>For time 8.0 s</li> </ul>		ACCEPTE BY	
	ž	TOOL TO THE TOTAL THE TOTAL TO THE TOTAL TOT	For time 8.0 s		BILLE	
	1016, 1871		Driving condition range 3 (opua):			5
	t or in w		Desired mass flow > 40.0 kg/h			ect to the
	ss, in par		<ul> <li>Manifold pres- sure &gt; 550.0 hPa</li> </ul>			e correct
	alpurpose		Delta adaptation value range 3.0 < 2.97 hPa			respect to the correctness of Information
	merci		<ul> <li>For time 5.0 s</li> </ul>	V /		$form_{G}$
	Mos		General:		on lin	di-
		September of Children Walnedon	<ul> <li>Engine operation in every driving condition &gt;= 2.0 times</li> </ul>		Hilling of the Hillin	
		ADD IMBINADOS	Diagnosis evap purge system not active	ONTOlkswagen	Meingo	
			• Engine speed 500 – 6,000 RPM	) v ~		
			Manifold pres- sure > 0.0 hPa			
			Ratio manifold pressure to am- bient pressure < 0.85 [-]			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Mani- fold	Manifold Pressure Sensor Short To Ground	Signal volt- age < 0.20 V		1.0 s     Continuous	• 2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to	
Baro- metric Pres- sure Sen- sor Circuit Low						T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.	
Low			oo	ed by Volkswager	∖AG. Volkswagen A	Check the Intake Mani- fold Sensor - GX9 Refer to	₹0 <sub>00</sub> ,
D0400		0: 1:	e, is not bound.		0.004	∃3.6.15 ntake Manifold Sensor GX9, Checking", page 698	Orany liability with res
Mani- fold	Manifold Pressure Sensor Short To Battery / Open Cir- cuit	• Signal volt- age > 4.86 V	es, in part or in who	1.0 s     Continuous	• 2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to	specttomeconeca
Baro- metric Pres- sure Sen- sor Circuit High	Cuit		ne or commercial purposes, in part or in whole			T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.	Led to Mile Direction in Contraction of the Contrac
nigri			EOO TO BEAUTHOUS INTO	Moongpan		- Check the Intake Manifold Sensor - GX9 Refer to	rentrols,
					A .ĐA,	Manifold Sensor GX9, Checking", page 698.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Intake Air Temperature Sensor 1 Circuit Rang e/ Performanc e Bank 1	ture Rationality Check	unlese authorised by v	<ul> <li>Time after engine start 2.0 s</li> <li>Or</li> <li>Diff. ECT vs. ECT outlet &lt;= 20° C</li> <li>Time after engine start 2.0 s</li> <li>Solar radiation case 1:</li> <li>AAT @ start &lt;= 2° C</li> <li>Minus</li> <li>AAT @ condition:</li> <li>Vehicle speed &gt; 20 km/h swagen AG</li> <li>For time &gt; 5.0 s</li> <li>Solar radiation case 2:</li> <li>IAT @ start &lt;= 2° C</li> <li>Minus</li> </ul>	• 60.0 s • Once / DCY	2 DCY      2 DCY      3 dcdadtany liability with respect to the correctness of the c	<ul> <li>Check the Intake Manifold Sensor - GX9 Refer to</li> <li>∃3.6.15 ntake Manifold Sensor GX9. Checking", page 698.</li> <li>Check the Engine Coolant Temperature Sensor -G62 Refer to</li> <li>∃ E3.6.7 ngine Coolant Temperature Sensor G62. Checking", page 683.</li> <li>Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to</li> <li>∃ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to</li> <li>∃ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.</li> </ul>
	pur commercial pur	To fall Mados Napa	BN G. Protection	DEWSAIO V VO TABITY	ne correctness of information in this country.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
Intake Air Temperature Sensor 1 Circuit Low	Intake Air Tempera- ture Sensor Short To Ground	• IAT > 130° C		• 5.0 s • Multiple	• 2 DCY	- Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking",	
Bank 1			of the state of th	, our		— Check the Engine Coolant Temperature Sensor G62. Checking", page 683	Iliability with respect to the con
			Copyright Copyright of Commercial purposesses	Mq paloalord	DA nagan	- Check the Engine Coolant Temperature Sensor on Radiator Coolant Temperature Sensor on Radiator Coulet G83. Checking", page 685.	ability with respect to the conscious sof information in this of



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Intake Air Tem- pera- ture Sen- sor 1 Circuit High Bank 1		• IAT < -46° C		• 5.0 s • Multiple	• 2 DCY	- Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9. Checking", page 698 .  - Check the Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62. Checking", page 683 .  - Check the Engine Coolant Temperature Sensor G62. Checking", page 683 .  - Check the Engine Coolant Temperature Sensor G62. Sensor G62. Checking". Sensor G62. Checking Sens
6. is not posmille.	Junes authorised b	<sub>Volksw</sub> agen AG. Volks	swagen AG does not guarante	or accept and light milities		on Radiator Outlet -G83 Refer to  ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.
onivare or commercial purposes, in part or in whole	Trop Blindon Jubindon	Profected by	De nagen AG.	or and the state of the state o	exect to the correctness of info-	



En- Coolant gine Tempera- No change on ECT @ start n.a. Once I ant Tem	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Mass air flow 4.0  - 40.0 kg/h  • Time required / > 10.0 s  • Frequency 3.0 times  • And  • Driving condition H:  • Vehicle speed 50  - 150 km/h  • Mass air flow ⊙ √ ∪ √ ∪ √ ∪ √ ∪ √ ∪ √ ∪ √ ∪ √ ∪ √ ∪ √	En-	Coolant Tempera-	No change or	• ECT @ start n.a.	Once I The DCY  Representation of the DCY  Once I The DCY  On	2 DCY     O Taccan induling with respect to me conscruess of information in this continue is a second of the conscruess of information in this continue is a second of the conscruess of information in this continue is a second of the conscruess of information in this continue is a second of the conscruence of the conscruence is a second of the conscruence of the consc	Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.  Check the engine coolant thermostat. Refer to appropriate repair man-



DTC / De- scrip-	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val-	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
tion	Sociption	ue ue	Conditions	711116		duis
	Engine		• Temp_01			
	Coolant Tempera-		ECT @ start n.a.			
	ture Sensor Stuck High		• ECT 105 – 140° C			
			Cold start n.a.			
			• Temp_02			
			• Substitute ECT > -45° C			
			Driving condition     L:			
			<ul> <li>Vehicle speed 0         <ul> <li>20 km/h</li> </ul> </li> </ul>			
			<ul> <li>Mass air flow 4.0</li> <li>– 40.0 kg/h</li> </ul>	akswagen AG.	Volkswagen AG doe	s not guarantee or accept
			• Time required (**) 10.0 s	Aoine		onot guarantee
			Frequency 3.0 times			J. accept
			• And			
			• Driving condition H:			
			Vehicle speed 50 – 150 km/h  Mass air flow 32.0 – 352.0 kg/h			
			Mass air flow 32.0 – 352.0 kg/h			
			Time required / > 40.0 s Frequency once			
			Frequency once			West Copyright by Volksm



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Gri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
oses, in part or m	Engine Coolant Coolant Temperature Sensor Stuck In Range	Signal in range 75.0 – 105.0° C  And  No change on signal n. a.	<ul> <li>Cold start detected</li> <li>Stuck high n.a.</li> <li>Temp_01</li> <li>ECT @ start n.a.</li> <li>Temp_02</li> <li>Substitute ECT n.a.</li> <li>Driving condition L:</li> <li>Vehicle speed n.a.</li> <li>Mass air flow n.a.</li> <li>time required / n.a.</li> <li>Frequency n.a.</li> <li>And</li> <li>Driving condition H:</li> <li>Yehicle speed n.a.</li> <li>Mass air flow n.a.</li> <li>Time required / n.a.</li> <li>Time required / n.a.</li> <li>Frequency n.a.</li> </ul>	• 2.0 s Co	, and liability with respect to the correctness of information in this ook	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
En- gine Cool- ant Tem- pera- ture Sen- sor 1	Engine Coolant Tempera- ture Sensor Short To Ground	• ECT > 140G.	Secondary Parameters with Enable Conditions  /olkswagen AG does not gua	• 2.0 s • Multiple	• 2 DCY	- Check the Engine Coolant Temperature Sensor G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.
purposes, in part or ir					to the correctness of ,	<ul> <li>Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to</li> </ul>
Commercial	O Reality of Children in	Protected by copy,		John Jahron Jan Jan Jan Jan Jan Jan Jan Jan Jan Ja	information in the	E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685
	*96	Protected by CODy	.DA negewaylo Vyo	Mor		<ul> <li>Check the engine cool- ant thermo- stat. Refer to appropriate repair man- ual.</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
En- gine Cool- ant Tem- pera- ture Sen- sor 1	Engine Coolant Tempera- ture Sensor Short To Battery / Open Cir- cuit	• ECT < -40° C		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.
		authorised b	Volkswagen AG. Volkswage	n AG does not gu	aranies or	<ul> <li>Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to</li> </ul>
	n whole is:	ille difficulties in the second secon	• Engine speed > 480 RPM		*CCBDIANALIBIDITIES	E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.
	al purposes, in part or i					- Check the engine coolant thermostat. Refer to appropriate repair man-
tle/	4 D 5	• And	• Engine speed > 480 RPM	• 0.3 s • Multiple	• 2 DCY	Check the Throttle Valve Control Module - GX3 / J338 Refer to
sor/ Switc h "A" Circuit Rang e/ Per- for-		Actual TPS1     - calc value     > actual     TPS2 - calc     value      Or      TPS1 - calc.	Protected by	<sup>9</sup> A negswaylo V <sub>V</sub>	• 2 DCY	T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.
manc e		value > 9.0%				



300¢.	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
onmercial purposes, in part or in whole, is no	Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "A" Circuit Low	Throttle Position Sensor 1 Out Of Range Low	• Signal volt- age < 0.20 V		• • • • • • • • • • • • • • • • • • •	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
	Throt- tle/ Pedal	Throttle Position Sensor 1 Out Of Range High	• Signal volt- age > 4.81 V	DA NOWSWADON VOMSWADEN AG	OM s     Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
	P0130 O2 Sen- sor Circuit Bank 1 Sen- sor 1	Oxygen Sensors Front Out Of Range	• O2S ceramic temp. < 640° C	<ul> <li>Modeled exhaust temp &gt; 300° C</li> <li>Fuel cut off not active</li> </ul>	<ul><li>15.0 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor	Oxygen Sensors Front Sig- nal Range Check	<ul> <li>Short to ground</li> <li>Virtual mass (VM) &lt; 1.75 V</li> <li>Or</li> <li>Nernst voltage (UN) &lt; 1.50 V</li> <li>Or</li> <li>Adjustment voltage (IA) &lt; 0.30 V</li> <li>Or</li> <li>Adjustment voltage (IP)</li> </ul>	710)k	<ul> <li>5.0 s</li> <li>Multiple</li> </ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to
O2 Sen- sor	Oxygen Sensors Front Sig- nal Range Check	<ul> <li>Nernst voltmage (UN) 4.40 V</li> <li>Or</li> <li>Adjustment voltage (IA) &gt; 7.0 V</li> <li>Or</li> </ul>	Sologie dunies authoris ed by Volk			fer to  ⇒  O3.6.23 xy- gen Sensor  1 Before Catalytic Converter GX10, Checking", page 716.
			Solo Steam To Bull do HOUNDON ADD	Protecte	JA negswexy	O Wolfing or James of the World



DTC / Mon Strat scrip- tion	tegy	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0133 Oxyge Senso Front I sponse Rate N toring, Ratio Sensor 1	rs Re- e ⁄Ioni-	<ul> <li>Symmetric fault:</li> <li>Lower value of both area ratios R2L and L2R &lt; 0.25 [-] (CBTA)</li> <li>Lower value of both area ratios R2L and L2R &lt; 0.20 [-] (CBUA)</li> <li>And</li> <li>Difference of R2L area ratio -0.40 - 0.40 = 0.40</li></ul>	<ul> <li>7.99%</li> <li>Exhaust system lag time calculation 0.15 – 0.33 s</li> <li>Gradient of exhaust system lag time calculation &lt;= 0.0 s</li> <li>ECT &gt;= 10° C</li> <li>Catalyst temperature &gt;= 450° C</li> <li>Lambda control set-point prior to diagnostic fuel steps A/F-ratio stoichiometric</li> <li>Relative fuel amount from wall applied compen-</li> </ul>	Protected		O3.6.23 xy- gen Sensor 1 Before Catalytic Converter	Hit with Comment of the world o



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
scription  Scription	Oxygen Sensors Heater Front Out Of Range High	O2S ceramic temperature < 720° C     And     Heater duty cycle > 100.0%     O2S ceramic temp < 715° C     And	Diagnosis evap purge system not active     Fuel cut off for sany cylinders not active     Open circuit pump current (IP) ready     Only Flex fuel systems without ethanol sensor:     Ethanol concentration adaptation not active      Modeled exhaust gas temp. > 550° C     Heater control active      ECT at start > -10° C	Time		- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking",
	Heating 1040 Up)	• Time after O2S heater on 35.0 s	s (key off) < 500.0 keep alive time (key off) < 500.0			<u>page 716</u> .



DTC / Mon De- scrip- tion Descri	egy teria and	ters with Enable	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0136 Oxyge O2 Sensor Sen- Sor Circuit O2S S Bank Circuit Sen- sor 2 (Heate Couplin Check)	age one ste at heater switching > 2.0 V  And  Number of heater coupling >= 6.0 times [-]	tion  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation For time 12.0 s (CBTA)  For time > 22.0 s		• 2 DCY  G does not guarantee  Lebensylo NA MPM	gen Sensor for Bank 1 Catalytic Converter - G4652. Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)". page 680



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Low Volt- age Bank 1 Sen- sor 2	Ground, Core Con- nection Sig- nal Wires)	Signal voltage < 0.06 V For time > 3.0 s And Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3 measurements) < 0.01 V  Sessauthorised by Volks W	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a. (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time n.a. (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0% swagen AG do</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Fuel cut off not active</li> <li>Catalyst purge not active</li> </ul>	• 3.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit High	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Out Of Range High (Short To Battery Plus)	Signal voltage > 1.08 V For time > 5.0 s  Saludo on the s	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Lambda set value &gt; 0.995 [-]</li> </ul>	• 5.0 s • Multiple  AG does not guare	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0139 O2 Sen- sor Circuit Slow Re- spons e Bank 1 Sen- sor 2	Oxygen Sensors Rear (Binany LSF) Check Of Transient Time At Fuel Cut Off	EWMA filtered transient time at fuel cut off > 0.6 s     O2 voltage between 201.0 – 401.0 mV     Number of checks (initial phase) >= 4.0 [-]     Number of checks (step function) >= 3.0 [-]	<ul> <li>Rich voltage (enable) &gt;= 548.0 mV</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> <li>Or</li> <li>Trigger for step change: delta transient time &gt; 0.3 s</li> </ul>	• 4.5 s • Multiple	• 1 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P013 A O2 Sen- sor Slow Re- spons e- Rich to Lean Bank 1 Sen- sor 2	O2 Sensor Slow Re- sponse - Rich to Lean Bank 1 Sensor 2	EWMA filtered max differential transient time at fuel cutoff >= 0.8 s     And     Number of checks >= 1.0 [-]	flow dynamic within range -500.0 – 500.0 kg/h  Sensor voltage at start of measurement > 0.45 V  Target voltage end of measurement <= 0.15 V		• 1 DCY	gen Sensor for Bank 1 Catalytic Converter - G465 Refer to C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)"
		to the season of	Protected by cop	Jokewagen AG.	Manughidoo jaantoo	765.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time gen AG. Volkswa		Component Diagnostic Procedure
O2 Sen- sor Circuit No Activi- ty De- tected	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity (Sensor Signal Line Open Cir- cuit)	Signal voltage 0.40 – 0.60 V  For time > 3.0 s  Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) >= 2.80 V	<ul> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> </ul>	• 5.0 s • Multiple	• 2 DCY <sup>not</sup> gu	Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  303.6.22 xy gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  C3.6.6 enter Oxygen Sensor for Converter - CASSE CONVERTER CASSE CONV



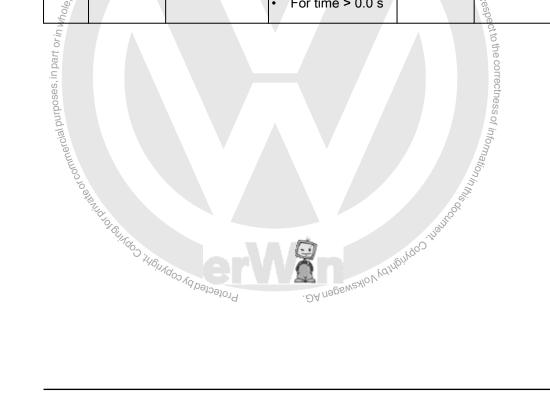
Case 1: sensor sistance > 40,000.0 Ω   50.0 s sistance > 40,000.0 Ω   60.0 s sistance > 4
• Valid Ri-meas- urements > 10.0 times [-]



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Heat- er Cir- cuit Bank 1 Sen- sor 2	Oxygen Sensors Heater Rear 2 - Point - LSF Out Of Range	<ul> <li>Heater resistance         1,200.0 –         32,400.0 Ω         (CBTA)</li> <li>Heater resistance         880.0 –         30,400.0 Ω         (CBUA)</li> </ul>	Modeled exhaust gas temp. 200 – 680° C  Engine shut-off-time > 120.0 s  (During ECM keep alive-time after ignition off) < 500.0 s (CBTA)  (During ECM keep alive-time after ignition off) < 1,200.0 s (CBUA)  Number of checks 10.0 [4] (CBUA)  Fuel cut off not active  Heater commanded on	• Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter to 33.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 Check the Center Oxygen Sensor for Bank 1 Catalytic Converter G465 Refeto ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refeto ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Checking (CBUA)", page 680.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Circuit Bank 1 Sen- sor 3	Circuit Continuity (Heater Coupling Check)	<ul> <li>Delta voltage one step at heater switching &gt; 2.0 V</li> <li>And</li> <li>Number of heater coupling &gt;= 6.0 times [-]</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>For time &gt; 10.0 s</li> <li>Heater not active</li> <li>For time &gt; 0.0 s</li> </ul>	• 60.0 s • Multiple	hrespe	<ul> <li>Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to</li> <li>⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680</li> <li>Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to</li> <li>⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7. Checking", page 713</li> </ul>
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	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable age	Monitoring nALength Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- Resor Point Control Co	Sygen Gensors Gear 2 - Coint - LSF Description of the Core Condition of the Core Condition of the Core Core al Wires of the Core Core Core al Wires of the Core Core Core Core Core Core Core Cor	Signal Voltage < 0.06 V  For time > 3.0 s  And  Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) < 0.01 [V]	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time n.a.</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time n.a.</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0</li> <li>General:</li> <li>Dew point exceeded</li> <li>Fuel cut off not active</li> <li>Catalyst purge not active</li> </ul>	• 3.0 s • Multiple		G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680  Check the



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sensor Circuit High Voltage Bank 1 Sensor 3	Point - LSF O2S Signal Check - Out Of Range High (Short To Battery Plus)	Signal voltage > 1.08 V For time > 5.0 s  Signal voltage > 1.08 V  Note: The property of the	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 - 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s</li> <li>General:</li> <li>Dew point exceeded</li> <li>Lambda set value &gt; 0,995 [-]</li> </ul>	• 5.0 s • Multiple	ŤD.	<ul> <li>Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to</li> <li>⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .</li> <li>Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to</li> <li>⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7. Checking ', page 713 .</li> </ul>
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DTC / Mor De- Strate scrip- Descrition	tegy	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0145 O2 Sensor Sor Circuit Slow Respons e Bank 1 Sensor 3	ors Bina- (S) (Of ent At	<ul> <li>EWMA filtered transient time at fuel cut off &gt; 1.5 s</li> <li>In voltage range 201.0 – 401.0 mV</li> <li>Number of checks (initial phase) &gt;= 4.0 [-]</li> <li>Number of checks (step function) &gt;= 3.0 [-]</li> </ul>	<ul> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass ≤ 50.0 kg/h</li> <li>Rear O2 - sensor internal resistance &lt;= 131,070.0 Ω</li> <li>Or</li> </ul>	• 4.5 s • Multiple  Multiple  Multiple	• 1 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to G465 Refer to G465 Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to G3.6.22 xygen Sensor 1 After Catalytic Converter - GX7 Refer to G3.6.22 xygen Sensor 1 After Catalytic Converter GX7 Refer to G3.6.22 xygen Sensor 1 After Catalytic Converter GX7 Checking", page 713 .	toe of accept any liability with 100 in this control in the contro



PO146 Oxygen Sensors Sensors Sensors Rear 2 - sor Circuit Cortect Ox Signal No Check - Activiteted Bank 1 Sensor Sensor 3 Open Circuit 1 Sensor 3 Open





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length	MIL Illumina- tion	Component Diagnostic Procedure
P0147 O2 Sen- sor Heat- er Cir- cuit Bank 1 Sen- sor 3	Sensors Heater Rear 2 -	• Heater resistance 1,200.0 – 32,400.0 Ω	Modeled exhaust gas temp. 200 – 680° C  Engine shut-off-time > 120.0 s  (During ECM keep alive-time after ignition off) < 500.0 s  Number of checks 10.0 [-]  Fuel cut off not active  Heater commanded on	<ul><li>6.0 s</li><li>Multiple</li></ul>	• 2 DCY	to  ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con-
rect Fuel Com-	ECM: EGAS Module Function Monitoring: Injection Time ECM: EGAS Module Function Monitoring: Lambda Mode ECM: EGAS Module Function Monitoring: Lambda Mode COM: COM: COM: COM: COM: COM: COM: COM:	Comparison with fuel quantity incorrect      Internal check failed      Correction factor incorrect	Internal engine speed > 1,200 RPM	• 0.5 s • Continuous	• 2 DCY	- Check for contaminated/aged fuel or possible high concentration of alcohol in fuel (above 15%). Poor quality fuel will also increase consumption. Replace with fresh fuel if believed to be contaminated. Refer to appropriate repair manual.  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Fuel quantity incorrect				O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716  - If fuel quality is adequate, replace the Engine/ Motor Con- trol Module. Refer to ap- propriate re- pair manual.
P0201 Cylin- der 1 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694
P0202 Cylin- der 2 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous     Nagen AG. Volks	• 2 DCY  wagen AG does not	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors. Checking", page 694.
P0203 Cylin- der 3 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	Injection valve switched off     Engine speed >	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to \$\frac{1}{2}\$ \$
P0204 Cylin- der 4 Injec- tor "A" Circuit		• Signal voltage 4.50 V sesodund versions	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	Fuel Injectors. Refer to
P0205 Cylin- der 5 Injec- tor "A" Circuit	Injection Valves Open Cir- cuit	• Signal volt-	• Injection valve switched off  • Engine speed > 80 RPM  • ROWNER OF THE PROPERTY OF THE PROPE	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to Injectors, Checking", page 694.
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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Posi- tion		<ul> <li>TPS1 - TPS2 &gt; 6.30%</li> <li>And</li> <li>Actual TPS2 - calc. value &gt; actual TPS1 - calc. value</li> <li>or</li> <li>TPS2 - calc. value &gt; 9.0%</li> </ul>	• Engine speed > 480 RPM	0.3 s     Multiple  Oracoadam libriding with re-  Oracoadam l	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P0222 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc n "B" Circuit Low	Throttle Position Sensor 2 Out Of Range Low	• Signal volt- age < 0.20 V		• Multiple	ot to the correctness of inte	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
		• Signal voltage > 4.81 V	DA nagen AG.	• 0.1 s	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P0261 Cylin- der 1 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0262 Cylinder 1 Injector "A" Circuit High		• Signal cur- rent 2.20 – 4.0 A	<ul><li>Injection valve switched on</li><li>Engine speed &gt; 80 RPM</li></ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0264 Cylin- der 2 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	Signal volt- age < 3.0 V   Newagen AG. Volk-	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors. Checking", page 694.
P0265 Cylinder 2 Injector "A" Circuit	Injection Valves Short To Battery Plus	Signal current 2.20 – 4.0 A	Injection Valve switched on     Engine speed > 80 RPM	• 0.5 s • Continu-	• 2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.
P0267 Cylinder 3 Injector "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.
P0268 Cylin- der 3 Injec- tor "A" Circuit High	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	O.5 s     Continuous	•ss of informa	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
Cvlin-	Injection Valves Short To Ground	• Signal voltage < 3.0 V	Injection valve switched off     Engine speed > 80 RPM     RPM     ON HORNON AND THE SWITCH SWI	• 0.3.8 • Continu- ous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0271 Cylin- der 4 Injec- tor "A" Circuit High	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0273 Cylin- der 5 Injec- tor "A" Circuit Low	Injection Valves Short To Ground	• Signal volt- age < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Cylin- der 5 Injec- tor "A" Circuit High		• Signal cur- rent 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
P0300 Ran- dom/ Multi- ple Cylin- der Mis- fire De- tected	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	• Emission threshold misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>AT &gt; -48° C</li> <li>ECT @ start &gt; -48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not detected</li> </ul>	• 1,000 rev • Multiple	• 2 DCY	<ul> <li>Check the intake system visually for leaks (false air).</li> <li>Check the spark plugs visually for signs of fouling.</li> <li>Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.</li> <li>Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in           C3.1 heck*, page 14 and/or to appropriate repair manual.</li> <li>Check the Fuel Injectors. Refer to</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
506, is not postnie.	ed unless authorises		sswagen AG does not guarant		5[	F3.6.13 uel Injectors, Checking", page 694.  - Check the Ignition Coils with Power Output Stage. Refer to    3.6.14 gnition Coils With Power Output Stage. Coils With Power Output Stage. Checking", page 696.
Cylin- der 1 Mis- fire De-	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	threshold misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not detected</li> <li>Told uebeen start of the complex o</li></ul>	• 1,000 rev • Multiple	2 DCY 2 pct to the correctness of inform	<ul> <li>Check the intake system visually for leaks (false air).</li> <li>Check the spark plugs visually for signs of fouling.</li> <li>Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.</li> <li>Check the fuel pressure and delivery quantity. Refer to fuel system me-</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	inless authorised by	Catalyst damage misfire rate (MR) > 3.4 – 20.3% (CBTA)  Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)  CBUA  COMMAN  COMMAN	vagen AG does not guarantee	• 200 rev • Multiple	• Immediately	chanical testing in  ⇒ C3.1 heck", page 14 and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694 .  - Check the Ignition Coils with Power Output Stage. Refer to ⇒ I3.6.14 gnition Coils With Power Output Stage. Refer to checking", page 696 .
Cylin- der 2 Mis- fire	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	threshold misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; -48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not detected</li> </ul>	• 1,000 rev	• 2 DCY	<ul> <li>Check the intake system visually for leaks (false air).</li> <li>Check the spark plugs visually for signs of fouling.</li> <li>Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low com-</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage mis- fire rate (MR) > 3.4 – 20.3%		<ul><li>200 rev</li><li>Multiple</li></ul>	Immediately	pression readings or for carbon buildup re- moval.
		(CBTA)  • Catalyst damage misfire rate (MR) > 3.4 – 20.0% (CBUA)				<ul> <li>Check the fuel pressure and delivery quantity. Re- fer to fuel system me- chanical testing in</li> </ul>
		, a)Va	<sub>swagen</sub> AG. Volkswagen A <sub>G</sub>	does		C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
		less authorised by Vol.		Thot guarante	Orac <sub>cc</sub>	<ul> <li>Check the Fuel Injectors. Refer to</li> </ul>
	Snotborning	8 Jin			Stead lighting with	F3.6.13 uel Injectors, Checking", page 694
	, in part or in whole, <sub>i,</sub>				, respect to me come	Check the Ignition Coils with Power Output Stage. Refer to
	commercial purposes		Active after en- gine start idle		curess of information	I3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696.
der 3 Mis- fire	Speed Fluctuation (Single Or	misfire rate	Active after engine start idle –     150 RPM + 1 camshaft rev	• 1,000 rev	• 2 DCX	- Check the intake system visually for leaks (false air).
De- tected	Multiple)	**************************************	Active after engine start idle – 150 RPM + 1 camshaft rev  Engine speed range 500 – 6,400 RPM  Engine torque >= 0.0 Nm  IAT > - 48° C	DEWENNON KOMENNAGE		Check the spark plugs visually for signs of fouling.
			<ul> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> </ul>			Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
uon	.commercial purposes, in part or in whole, is,		• Rough road not detected	• 200 rev • Multiple	• Immediately	cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.  - Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in C3.1 heck", page 14 and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to
						Injectors, Checking", page 694
B0004				4.000		- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696
P0304 Cylinder 4 Misfire Detected	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	<ul> <li>Emission threshold misfire rate (MR) &gt; 2.0%</li> </ul>	Active after engine start idle – 150 RPM + 1 camshaft rev      Engine speed range 500 – 6,400 RPM	• 1,000 rev • Multiple	• 2 DCY	<ul> <li>Check the intake system visually for leaks (false air).</li> <li>Check the spark plugs</li> </ul>



	<ul> <li>Catalyst damage misfire rate (MR) &gt; 3.4 – 20.3% (CBTA)</li> <li>Catalyst damage misfire rate (MR) &gt; 3.4 – 20.0% (CBUA)</li> </ul>	<ul> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active yolks was active yolks was active yolks was active yolks was active detected</li> </ul>	Multiple	• Immediately	visually for signs of fouling.  - Check for an engine mechanical fault with a cylinder
	<ul><li>(CBTA)</li><li>Catalyst damage misfire rate</li></ul>	• Fuel cutoff not active lower addy  - addy	.Volkswagen AG	does not gus	engine me- chanical fault with a cylinder
	of part or in whole, is not be not been to seen in the second of the sec	Rough road not start detected		BENSHION AGURBURGO	cause a higher than normal compression reading and may contribute to this concern Refer to appropriate repair manual for low compression readings or for carbon buildup removal.  - Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in C3.1 heck", page 14 and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to
					F3.6.13 uel Injectors, Checking", page 694.
					- Check the Ignition Coils with Power Output Stage. Refer to  3.6.14 gnition Coils



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	710	18) 'S (S)				Stage, Checking", page 696
	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	misfire rate (MR) > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not defected</li> </ul>	• Multiple • Multiple	• 2 DCY	page 696 .  - Check the intake system visually for leaks (false air).  - Check the spark plugs visually for signs of foul-
						pression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.
						<ul> <li>Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in</li> <li></li></ul>
						page 14 and/or to ap- propriate re- pair manual.
						<ul><li>Check the Fuel Injectors. Refer to</li></ul>
						F3.6.13 uel Injectors, Checking", page 694 .

## Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

		97.			~	(A)
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		• Catalyst damage misfire rate (MR) > 3.4 – 20.3% (CBTA) • Catalyst damage misfire rate damage misfire rate (MR) > 3.4 – 20.0% (CBUA)		<ul><li>200 rev</li><li>Multiple</li></ul>	Immediately	- Check the Ignition Coils with Power Output Stage. Refer to 13.6.14 gnition Coils With Power Output Stage, Checking", page 696
P0321 Ignition/ Distributor Engine Speed Input Circuit Rang e/ Performanc e	RPM Sensor Rationality Check	Counted teeth vs. reference incorrect  Or  Monitoring reference gap failure	Protected by copyright	• 2.0 s • Multiple • 2.0 s	· 2 DCY	page 696 .  Check the Engine Speed Sensor -G28 Refer to   E3.6.9 ngine Speed Sensor G28, Checking", page 686 .  Check the Camshaft Position Sensor - G40 Refer to   C3.6.3 amshaft Position Sensor G40, Checking", page 674 .
P0322 Ignition/ Distributor Engine Speed Input Circuit No Signal	RPM Sensor Signal Activity Check	<ul> <li>Camshaft signals &gt; 5.0 [-]</li> <li>And</li> <li>Engine speed no signal</li> </ul>		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sensor -G28-Refer to  ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686.  - Check the Camshaft Position Sensor -G40-Refer to  ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674.



	·	Nolkswager	does not	•	•	<u> </u>
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Com- bus-	Knock Con- trol Internal Hardware Check	<ul><li>Signal fault counter (combustion) &gt; 30.0 [-]</li><li>Or</li></ul>	• Engine speed > 2,000 RPM	O.5 s     Continus ous	• 2 DCY	<ul> <li>Check the Knock Sen- sor 1 -G61 Refer to</li> <li>★</li> <li>K3.6.16 noc</li> </ul>
tion Vibra- tion Con- trol Sys-		• Signal fault counter (measuring window) > 2.0 [-]			en respect to the correctness of information	k Sensor 1 G61, Checking", page
∜tem ∉rror		2.0 [-]			ctness of Inform	- Check the Knock Sen- sor 2 -G66 Refer to
ove or commercial purp	The state of the s			"In this object."	atio	K3.6.17 noc k Sensor 2 G66, Check- ing", page 702
P0327 Knock / Com- bus-	Knock Sen- sor Short To Ground Port A	• Lower threshold < - 0.70 V	• Engine speed > 1,000 RPM	200	• 2 DCY	- Check the Knock Sen- sor 1 -G61 Refer to
tion Vibra- tion Sen-	To Ground Port B					K3.6.16 noc k Sensor 1 G61, Check- ing", page
Low Bank 1 or	Knock Sen- sor Signal Range Check	<ul><li>Lower threshold &lt; 1.4 – 5.6 V</li></ul>	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt;</li> </ul>	• 0.5 s • Multiple		- Check the Knock Sen- sor 2 -G66 Refer to
Single Sen- sor			30.0 – 33.8%			Exercto  Example 10  Example
Knock / Com-	Knock Sensor Short To Battery Plus Port A	<ul><li>Upper threshold &gt; 1.0 V</li></ul>	• Engine speed > 1,000 RPM	• 0.5 s • Continuous	• 2 DCY	<ul> <li>Check the Knock Sen- sor 1 -G61 Refer to</li> </ul>
bus- tion Vibra- tion Sen-	Knock Sensor Short To Battery Plus Port B					₹3.6.16 noc k Sensor 1 G61, Check- ing", page
sor 1 Circuit High Bank 1 or Single Sen-	Knock Sen- sor Signal Range Check	• Upper threshold > 23.0 – 92.0 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	<ul><li>0.5 s</li><li>Multiple</li></ul>		700 .  - Check the Knock Sensor 2 -G66 Refer to
sor						₹3.6.17 noc k Sensor 2 G66, Check- ing", page 702

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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Knock / Com- bus- tion	Knock Sen- sor Short To Ground Port A Knock Sen- sor Short	• Lower threshold < - 0.70 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to ⇒ K3.6.17 noc
Vibra- tion Sen- sor 2	To Ground Port B Knock Sen-	• Lower	Engine speed >	• 0,5, <b>s</b> agen	.G. Volkswagen A.G	k Sensor 2 G66, Check- ing", page 702
	sor Signal Range Check	threshold < 1.4 – 5.6 V	2,000 RPM  • ECT > 41° C	Multiple		K3.6.17 noc k Sensor 2 G66, Check- ing", page does 702 ·
	Knock Sensor Short To Battery Plus Port A Knock Sensor Short	Upper threshold > 1.0 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to ⇒ K3.6.17 noc k Sensor 2
tion Sen- sor 2	To Battery Plus Port B Knock Sen- sor Signal Range Check	• Upper threshold > 23.0 – 92.0 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	0.5 s     Multiple		G66, Check- ing", page 702
P0341 Cam- shaft Posi- tion Sen- sor "A" Circuit Rang e/ Per- for- manc e Bank 1 or Single	Phase Sensor 1 Rationality Check	Signal pat- tern incor- rect	FO TO STANLE OF STANLES STANLE	• 0.5 s • Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to
Sen- sor						Refer to  ⇒ E3.6.9 ngine Speed Sen- sor G28, Checking", page 686.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Cam-	Phase Sensor 1 Rationality Check	<ul> <li>Signal voltage permanently low</li> <li>Crankshaft signal 8.0 [-]</li> </ul>	an AG. Vol	0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to   C3.6.3 amshaft Position Sensor G40, Checking", page 674.
sor		indes ditte	rised by Volkswagen AG. Voll	o F	not guarantee or accept	- Check the Engine Speed Sensor -G28 Refer to E3.6.9 ngine Speed Sensor G28, Checking", page 686.
Cam- shaft Posi- tion Sen- sor "A" Circuit High Bank 1 or Single Sen-	sor 1 Ra-	Signal voltage permanently high Crankshaft signal 8.0 [-]		Continuous		Camshaft Position Sensor - G40-Refer to  C3.63 am- shaft Posi- tion Sensor G40, Check- ing", page 674
sor		ind to Jalisto Sign	Protected by copyrigh	.ĐA negsw	SWO NATURINADO judi	Check the Engine Speed Sensor -G28 Refer to  E3.6.9 ngine Speed Sensor G28, Checking", page 686.
P0351 Igni- tion Coil "A" Pri- mary Con- trol Cir- cuit/ Open		<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to    ignition Coils With Power Output Stage. Vith Power Output Stage. Checking", page 696.



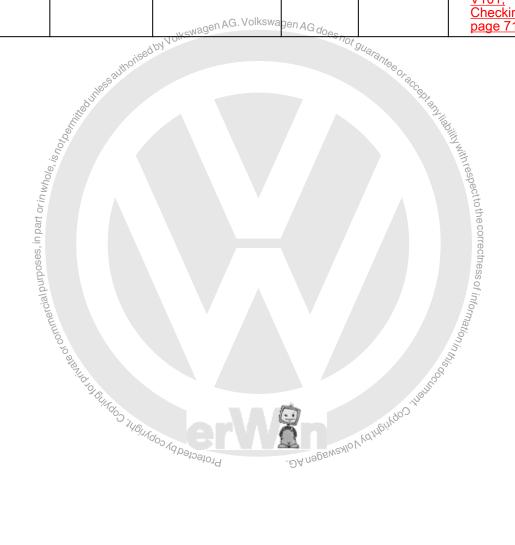
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0352 Ignition Coil "B" Primary Control Circuit/ Open	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696 .
P0353 Ignition Coil "C" Primary Control Circuit/ Open	Coils Open Circuit	Signal current -0.25 – -2.0 mA  Or Internal check failed	• Engine speed of the sector o	• Continuous	• 2 DCY  of guarantee or accepta	- Check the Ignition Coils with Power Output Stage. Refer to  3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P0354 Ignition Coil "D" Primary Control Circuit/ Open	Coils Open Circuit	Signal current -0.25 – -2.0 mA  Or  Internal check failed	• Engine speed > 680 RPM	<ul><li>0.5 s</li><li>Continuous</li></ul>		- Check the Ignition Coils with Power Output Stage. Refer to     3.6.14 gnition Coils   With Power Output     5.14 gnition Coils   With Power Output     5.14 gnition Coils   Checking", page 696   Checking", page 696   Checking   C
P0355 Ignition Coil "E" Primary Control Circuit/ Open	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – 444 – 2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	• O 2 s	· 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Criteria and Threshold Value UR ONE WAS	Secondary Parameters with Enable  AG Conditions  AG Coes		MIL Illumina- tion	Component Diagnostic Procedure
P0410 AIR Sys- tem "A"	Air System Check After SAI	• Deviation SAI pressure > 50.0 hPa	Mass sirflow 7.0	• 6.0 s • Once Pace	tand line with respect to the correctness of information in this cocc	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719.
P0413 AIR Sys- tem Switc hing Valve "A" Circuit Open	Air Valve Open Cir- cuit	• Signal volt- age 9.25 – 11.25 V	<ul> <li>Air valve commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	O.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to  ⇒ S3.6.26 eco ndary Air Injection Solenoid Valve N112, Checking", page 723 .
P0414 AIR System Switc hing Valve "A" Circuit Shorted	Air Valve Short To Ground	• Signal volt- age < 6.0 V	<ul> <li>Air valve commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	O.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to  ⇒ S3.6.26 eco ndary Air Injection Solenoid Valve N112,



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Air Valve Short To Battery Plus	• Signal cur- rent 2.20 – 4.20 A	Air valve com- manded on     Engine speed > 80 RPM			Checking", page 723
P0418 AIR Sys- tem Con- trol "A" Circuit	Air Pump Relay Open Circuit	• Signal volt- age 4.50 – 5.50 V	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0420 Catalyst System Efficiency Below Thres hold Bank 1	Strategy Description  Catalyst System Measure Of OSC Compared To OSC Of Borderline Catalyst	teria and Threshold Val- ue  Measured OSC / OSC of borderline	<ul> <li>ters with Enable Conditions</li> <li>Time after engine start &gt; 343.0 s</li> <li>Or</li> <li>Time after dew point &gt; 343.0 s</li> <li>Delta exhaust mass flow &lt; 25.0 kg/h</li> <li>Exhaust gas mass flow, lower range 25.0 - 130.0 kg/h (CBUA)</li> <li>Exhaust gas mass flow, lower range 25.0 - 120.0 kg/h (CBTA)</li> <li>Exhaust gas mass flow, upper range n.a.</li> <li>Modeled exhaust gas temp. dynamic &lt; 50 K</li> <li>Modeled exhaust gas temp. in catalyst system, lower range 500 - 860° C (CBUA)</li> <li>Modeled exhaust gas temp. in catalyst system, lower range 560 - 860° C (CBTA)</li> <li>Modeled exhaust gas temp. in catalyst system, lower range 560 - 860° C (CBTA)</li> <li>Modeled exhaust gas temp. in catalyst system, lower range 560 - 860° C (CBTA)</li> <li>Modeled exhaust gas temp. in catalyst system in catalyst system along the per range n.a.</li> <li>Minimum modeled exhaust gas temp. in catalyst system &gt; 400° C</li> <li>For time &gt; 120.0 s</li> <li>Filtered minimum</li> </ul>	• 40.0 s (CBUA) • 30.0 s (CBTA) • Once / DCY	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ O3.6.23 xy-gen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ C3.6.6 enter Oxygen Sensor 1 Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 Checking (CBUA)", page 680.  - Check the Oxygen Sensor 1 Converter - GX10 Refer to
			modeled exhaust gas temp. in catalyst system > 450° C  • Engine load 12.8 – 65.3% (CBUA)  • Engine load 12.8			Converter (TWC). Refer to ⇒ T3.6.27 hree Way Catalytic Converter (TWC).
			- 60.0% (CBTA)			Checking", page 725



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
			<ul> <li>Evap purge load- ing not high</li> </ul>			
			• Engine speed 1,200 – 3,320 RPM			
		n/cW	Range between lambda set value and lambda valagenue	)Q.		
		"Horised by Volks.	<ul> <li>Out of lambda range &lt; 2.0 s</li> </ul>	os not guarantee		
		Ressaut	Lambda control closed loop	0	accepte.	
	hotoemite		Lambda control not at min or max limit		Middlinami	
	whole, is		Number of checks 3.0 [-]		hresper	
	torin		O2S front ready		ttoth	
	inpar		O2S rear ready		e corre	
	)oses,		No misfire		octnes	
	or commercial purp		O2S front re- sponse monitor- ing in current driving cycle ready		s of information in t	
	of Bully				2000	
	Ý	OUAGO HOUAGO AGPOJO	lambda set value and lambda value and lambda value < 0.02 [s] nAG do on the lambda range < 2.0 s  Lambda control closed loop  Lambda control not at min or max limit  Number of checks 3.0 [-]  O2S front ready  SAS not active  No misfire  O2S front response monitoring in current driving cycle ready	межо у кандинас	J. Tank	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	-1/0#	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sys- tem Incor- rect Purge	EVAP System Functional Check	• Deviation lambda control < 9.0% • And • Deviation idle control < 40.0%	<ul> <li>Time after engine start n.a.</li> <li>Engine speed idle</li> </ul>	• 20,0 s • Once / DCY hither the control of the con	• 2 DCY	- Check the EVAP System for Leaks. Refer to ⇒ \$2.2.4 ystem, Checking For Leaks", page 7.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump V144, Checking (4 Pin)", page 706.

## Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

	unie		Sox	
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions  Monitoring Length tion	Component Diagnostic Procedure
scription P0442 EVAP System Leak Detected (Small	EVAP System Small Leak Pressure Check	Threshold Val-	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature drop after engine start &lt; 5 K</li> <li>Intake manifold vacuum &gt; -2,560.0 hPa</li> <li>Altitude &lt; 2,700.0 m</li> <li>Vehicle speed &gt;= 0 km/h</li> <li>180.0 s</li> <li>Once / DCY</li> <li>Once / DCY</li> </ul>	dure  - Check the EVAP System for Leaks. Refer to ⇒ \$2.2.4 ystem, Checking For Leaks", page 7.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.
			<ul> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Restart temperature difference &gt; 52 K</li> <li>Evap purge valve closed</li> <li>LDP active</li> <li>Deep down hill driving</li> <li>Delta ambient pressure &lt; 7.03 hPa</li> <li>Or</li> <li>Engine load not &lt; 19.5 - 45.0%</li> <li>And</li> <li>Delta vehicle speed not &gt; -1 km/h</li> </ul>	<ul> <li>Check the Leak Detection Pump - V144 Refer to</li> <li>L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .</li> <li>Check the Leak Detection Pump - V144 Refer to</li> <li>L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P0444 EVAP Sys- tem Purge Con- trol Valve	EVAP Purge Valve Open Circuit	• Signal volt- age > 4.40 – 5.40 V	EVAP purge valve commanded off     Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the EVAP Can- ister Purge Regulator Valve 1 - N80 Refer to</li> </ul>	
"A" Circuit Open			Jess authorise f	joy Volkswagen A	G.Volkswagen AG	E3.6.10 VAP Canister Purge Regu- lator Valve 1 N80 Check- ing", page 688	
			in part or in whole, is not being in in part or in whole, is not being in the interest of the			- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page	a and liability with respect to the concerness of information in this could be a serious soft information in the concerness of the content of
			EVAP purge valve commanded off     Engine speed > 80 RPM      Engine speed > 80 RPM			704.  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page	information in this Och
			46114	Protected by cop	-DA no.	Variably Volkswag	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0455	EVAP System Large Leak Pressure Check	• Time for pressure drop < 0.95 s	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 105° C</li> <li>ECT 6 start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Air temperature drop after engine start &lt; 8 K</li> <li>Intake manifold vacuum &gt; -2,560.0 hPa</li> <li>Altitude &lt; 2,700.0 m</li> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Restart temperature difference &gt; 52 K</li> <li>Evap purge valve closed</li> <li>LDP active</li> <li>Deep down hill driving</li> <li>Delta ambient pressure &lt; 7.03 hPa</li> <li>Or</li> <li>Engine load not &lt; 19.5 – 45.0%</li> <li>And</li> <li>Delta vehicle speed not &gt;= -1 km/h</li> </ul>	• 180.0 s • Once /AG		- Check the EVAP System for Leaks. Refer to S2.2.4 ystem, Checking For Leaks", page 7.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to S2.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.  - Check the Leak Detection Pump - V144 Refer to S2.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump V144, Checking (4 Pin)", page 706.



P0456 EVAP Sys- EVAP term Very Sys- Samal Leak De- tected (Very Small Leak)  Preceding en gine shart 2.0 − 1,200.0 s  Preceding en gine shart 5 − 105° C  ECT € 105° C  Air temperature 5 − 165° C  Air temperature 6 drop after engine shart 3 K  Intake manifold vacuum² 2,580.0 hPa  Vehicle speed ones > 30 km/h  Vehicle speed ones > 30 k
load < 767.98%/seg



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0458 EVAP Sys- tem Purge Con- trol Valve "A" Circuit Low	Purge Valve Short To Ground	• Signal voltage < 2.15 – 3.25 V	<ul> <li>EVAP purge valve commanded off</li> <li>Engine speed &gt; 80 RPM</li> <li>AG. Volkswagen AG does</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.
Sys- tem Purge Con- trol	Purge Valve Short To Battery Plus	rent > 2.2 A	<ul> <li>EVAP purge valve comman- ded on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 Cylith respect to the correctness of information in this country.	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.
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DTC / Moni De- scrip- tion Descrip	egy teria and	ters with Enable	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0491 Air System Insufficient Flow Bank 1	heck Cate with SAI pressure sensor vs. modeled < 50.0 – 72.0%	- 120.0 kg/h  • Delta engine load -10.0 – 10.0%/rev  • ECT 5 – 108° C  • IAT 5 – 100° C  • Altitude < 2,700.0 m  • SAI pressure sensor ready	• 45.0 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719.
Populate or commercial P	Bundo Welver of Delogic	DA nagenzallo	Vedrive opinant	f information in this occ	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0496	Evaporative Emission System In- correct Purge Flow	pump cur- rent vs. dif- ference from	<ul> <li>Minimum ignition angle efficiency 20.0%</li> <li>Engine speed &gt;</li> </ul>		• 2 DCY	Check the     EVAP Can- ister Purge Regulator Valve 1 -
	- Stuck open	> 1.0 [-]	Engine speed     Deviation < 100			N80 Refer to ⇒ <u>E3.6.10 VAP</u>
		guttorised by Volkswager	20 RPM  Engine speed Deviation < 100 RPM  Time after enagine start > 600.0 s  ECT > 60° C  And  ECT at start < 60° C  AAT > 4 [-]  And  < 35° C  Altitude < 2,700.0 m  O2S front ready  EVAP purge valve commanded off  Engine speed > 2,800 RPM	o <sub>t au</sub> .		Canister Purge Regulator Valve 1 N80, Checking", page
		uthorised by	• ECT > 60° C	adarantee .		688 688
	dunless		<ul><li>And</li><li>ECT at start &lt;</li></ul>	of accep		Check the     Leak Detec-
	ot permit		60° C • AAT > 4 [-]		X light lift.	tion Pump - V144 Refer to
	9, is n		• And		With	<u>⇒</u> <u>L3.6.19 eak</u>
	whole		• < 35° C		spect	Detection Pump V144,
	oan orin		• Altitude < 2,700.0 m		tothec	Checking (4 Pin)", page
	20,000		O2S front ready		orrec	<u>706</u> .
	cial purpose		EVAP purge valve comman- ded off		thess of info	
P0501 Vehi-		• Vehicle speed < 6	• Engine speed > 2,800 RPM	• 10.5 s	• 2 DCY	<ul> <li>Check the vehicle</li> </ul>
cle Speed	Plausibility	km/h	Engine tergue	Multiple	Z Ditoninthis Collin	speed sig- nal. Refer to
Sen- sor "A"	14d 101041		Vehicle speed	.1115	uno	<u>∀3.6.29 ehi-</u> <u>cle Speed</u>
Circuit Rang e/ Per-	·	Protected by Copyright, Co	sensor no fault	lo Wampiydo Jir		Signal, Checking", page 729
for- manc e		, 939301	A .ĐA napan.			Check the CAN-Bus terminal resistance. Refer to
						⇒ C3.6.4 AN- Bus Termi- nal Resist- ance,
						Checking", page 676



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0506 Idle Con- trol Sys- tem RPM - Lower Than Ex- pec- ted	Idle Controller Out Of Range Low	<ul> <li>Engine speed deviation &lt; -100 RPM</li> <li>And</li> <li>RPM controller torque value &gt;= calculated max value.</li> </ul>	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> <li>For manual transmission:</li> <li>Engine load &lt; 34.5%</li> </ul>	• 7.0 s • Multiple  en AG. Volkswa	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338. Checking", page 726
P0507 Idle Con- trol Sys- tem RPM - High- er Than Ex- pec- ted	Idle Controller Out Of Range High	Engine speed deviation > 100	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> </ul>	• 7.0 s • Multiple	• 3 DCA	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Di- agnostic Proce- dure	
P050 A Cold Start Idle Con- trol Sys- tem Per- for- manc e	Cold Start Monitoring Idle Con- troller Out of Range Low	<ul> <li>Engine speed deviation &lt; -100 RPM</li> <li>And</li> <li>RPM controller torque value &gt;= calculated max. value</li> </ul>	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT @ start &lt; 143° C</li> <li>IAT &gt; -48° C</li> <li>EVAP purge valve closed</li> <li>External torque request not demanded</li> <li>Catalyst heating active</li> <li>For manual transmission:</li> <li>Engine load &lt; 34.5%</li> </ul>	• 5.0 s • Multiple  authorised by Volks	• 2 DCY	- Check the Throttle Valve Control Module - GX3 J338 Refer to T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.	or acceptant liability with respect to the correctness of information in this doctor.
	Cold Start Monitoring Idle Con- troller Out of Range High	Engine speed deviation > 100 RPM     RPM controller torque value <= calculated min. value     RPM controller P-portion and I-portion < -20.0 Nm	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT @ start &lt; 143° C</li> <li>IAT &gt; -48° C</li> <li>EVAP purge valve closed</li> <li>External torque request not demanded</li> <li>Catalyst heating active</li> </ul>	APO MONTO VA DE	Stoolon <sup>A</sup>	- ĐA nggen AG.	bingoo jilangook



	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	P052 A Cold Start "A" Cam- shaft Posi- tion Tim- ing Over- Ad- vance d	Cold Start Monitoring VVT Actua- tor Intake Target Er- ror	Difference between target position vs. actual position > 10° CRK	<ul> <li>Time after engine start &gt;= 10.0 s</li> <li>Engine speed &gt;= 400 RPM</li> <li>Modeled oil temperature &gt;= -48° C</li> <li>Catalyst heating active</li> </ul>	• 5.0 s • Once / DCY	• 2 DCY	- Check engine oil for incorrect viscosity or in need of servicing (dirty oil). Oil that is not clear in color may be causing the sensor to operate incorrectly. The engine
oial purposes, In part or in IMA.	Bank 1	ness authorised by l	<sub>Jolksw</sub> agen AG. Volksi	Catalyst heating active  Vagen AG does not guarantee.	A acceptant liability with respect of	to the correctness of the correc	oil must be clean and of the correct viscosity in order for the sensor to operate properly. Check the vehicle paperwork to determine what oil viscosity has been used and when the last oil change was performed. Change the engine oil if necessary.
	mo to are mid the	FEUNCOS WEUNCOS,	Protected	. DA nagen AG. Volkawagen AG.	Tation in this cook is the state of the stat		- Check the Camshaft Adjustment Valve 1 - N205 Refer to
	P0606 ECM/ PCM Pro- ces- sor	O/19011	• Difference between measured calibration resistance in ECM and set value > 45.0 Ω	<ul> <li>Time after engine start &gt; 40.0 s</li> <li>Engine speed idle</li> </ul>	<ul><li>40.0 s</li><li>Multiple</li></ul>	• 2 DCY	<ul> <li>Replace the Engine/ Motor Con- trol Module - J623 Refer to appropri- ate repair manual.</li> </ul>
		Altitude Sensor Plausibility Check	• Signal gradi- ent > 50.0 hPa		<ul><li>20.0 s</li><li>Multiple</li></ul>		



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DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	agnostic Proce-	
		• Signal gradi- ent < -50.0 hPa	o, is not being the state of th		7	~()	1110 G
	Altitude Sensor Short To Ground	• Signal volt- age < 0.20 V	inole, is no	• 0.2 s • Multiple			W.
	Altitude Sensor Short To Battery / Open Cir- cuit	• Signal volt- your age > 4.88 V				Alo V Walney Was In the Walnut of	
	ECM: WDA Function Monitoring:	General cause failure	mmera	<ul><li>0.5 s</li><li>Continu-</li></ul>			
	WDA	Internal check failure	to he are	ous			"In this
		Overvoltage detection failure	ELLINGO TO BURNINGO JUBINGO NO		9	Sundon jibundok	
	ECM: EE- PROM Check	Check failed	40/1/1/dos/1/	Protected A	SAN RGEN AG.	HOV KOIMP.	
	ECM: Self Check For Sensor IC internal Hardware Check (Electrical Adjustment Communi- cation, Volt- age Sup- ply)	Check					
	ECM: 5V Supply Voltage In- ternal Hard- ware Check	Under-/ overvoltage detection					
	ECM: A/D Converter Power-Up Calibration	Check failed	Initialization phase active				
	ECM: A/D Converter Adc-Cannel Conversion		<ul><li>Initialization phase active</li><li>Power-up calibration executed</li></ul>				
	ECM: EGAS Module Function Monitoring: A/D Con- verter	Comparison reference voltage with sensor volt- age incorrect					



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		<ul><li>Test voltage check failed</li><li>Internal check failed</li></ul>				
	ECM: EGAS Module Function Monitoring: Torque	Comparison with allowed engine tor- que incorrect	Internal engine speed > 600 RPMAG. Volkswagen olkswagen	AG does not guar	inte <sub>e o</sub>	
	ECM: EGAS Module Function Monitoring: Engine Speed Deviation	Difference between cal- culated and internal en- gine speed > 320 RPM	Internal engine speed > 600 RPMAG. Volkswagen  Internal engine speed > 520 RPM  RPM  Internal engine speed > 520 RPM		S accept that lib lill will	90899
	ECM: EGAS Module Function Monitoring: Coding	Internal check failed				<sub>set</sub> to the correctness
	ECM: Hand Research Module Function Monitoring Junition	38.			Selling Sellin	sof informa.
	ECM: EGAS Module Function Monitoring: Intern	System re- action incor- rect		negewexloV van	Montes institues	
	ECM: EGAS Module Function Monitoring: Injection Rate Limi- tation		*mq5,	A des		
	ECM: EGAS Module Function Monitoring: Accelerator Position	Internal check failed				



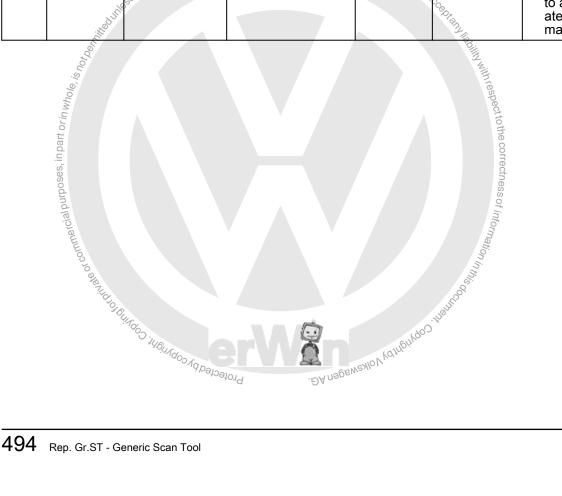
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
	ECM: EGAS Module Monitoring Module	Function controller check failed     And     Monitoring module check no failure	SPI - interface no failure				
	CAN: Internal Fault CAN Controller RAM Check	RAM error memory checksum error	<ul> <li>Initialization phase</li> <li>Time after ignition on 500.0 ms</li> </ul>	• 0.0 ms • Once / DCY			
	Fuel Pump Relay Open Circuit Fuel Pump Relay Short To Ground	5.50 V  • Signal volt-	manded off • Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	- Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay Delivery Unit GX1 / Fuel Pump Relay Delivery Check- ing", page	
	Fuel Pump Relay Short To Battery Plus	1.20 A	Pump relay commanded on     Engine speed > 80 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay	Treat Hiddling Williams
			ophing to the property of the part of the	Sched by copyright?	Project of the state of the sta	-J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Check- ing", page 690 .	SON IN THIS COUNTY



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
tle Ac- tuator Con- trol	tuator Basic Settings Rationality Check Close Movement  Throttle Actuator Basic Settings	close to reference point > 0.6 s  • And • Reference point 2.88%  • TPS 1 signal voltage not of the control of t	<ul> <li>Engine speed 0 RPM</li> <li>Vehicle speed 0 km/h</li> <li>ECT &gt; -20° C</li> <li>IAT &gt; -20° C</li> <li>Case 1:</li> <li>Ignition on</li> <li>Case 2:</li> <li>Engine shut-off-time 3.0 s</li> <li>Number of checks 2.0 [-]</li> <li>Engine speed 0</li> <li>SWARPM does not 0</li> <li>Vehicle speed 0</li> </ul>	• 5.0 s • Multiple • 0.3 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
purposes, in part or in whole, is not being.	Signal Range Check @ Mechanical Stop Low	<ul> <li>V</li> <li>Or</li> <li>TPS 2 signal voltage not (4.20 – 4.60) V</li> <li>Or</li> <li>TPS1 + TPS2 not (4.82 – 5.18) V</li> </ul>	<ul> <li>Vehicle speed 0 km/h</li> <li>Case 1:</li> <li>Ignition on</li> <li>ECT -20 - 115° C</li> <li>IAT -20 - 143° C</li> <li>Case 2:</li> <li>Engine shut-off-time 3.0 s</li> <li>ECT 5 - 115° C</li> <li>IAT 5 - 143° C</li> </ul>	Coraccade de la labilita de labilita de la labilita de labil	spect to the correctness of	
Sen- sor Refer- ence	ECM: Sensor Reference Circuit A Signal Range Check	V	-DA nagewaylo V to mb,	• 0.5 s • Continu- ous	ir tormo	<ul> <li>If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module J623 Refer to appropriate repair manual.</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P0651 Sen- sor Refer- ence Volt- age "B" Cir- cuit/ Open	ECM: Sensor Reference Circuit B Signal Range Check	• Signal volt- age devia- tion > +/- 0.3 V		0.5 s     Continuous	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.
P0697 Sen- sor Refer- ence Volt- age "C" Cir- cuit/ Open	sor Refer- ence Circuit C Signal Range Check	Signal voltage deviation > +/- 0.3 V	gen AG. Volkswagen AG doe	• 0.5 s • Continuous	• 2 DCY	<ul> <li>If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module J623 Refer to appropriate repair manual.</li> </ul>





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P117 A Bank 1, Oxy- gen Sen- sor Cor- rec- tion Cen- ter Sen- sor Con- trol Limit Reach ed		I - portion of 3rd lambda control loop > 0.03 [-]  output  Nagen AG. Volkswagen AG.	<ul> <li>Engine speed         1,400 – 3,600         RPM</li> <li>Modeled exhaust         gas temp 350 –         1,000° C</li> <li>Engine load 20.3         – 54.8%</li> <li>Lambda control         closed loop</li> <li>2nd lambda control closed loop</li> <li>3rd lambda control closed loop</li> <li>O2S rear ready</li> <li>Electrical check         ready</li> <li>O2S heater rear         ready no fault</li> </ul>	• 1,800.0 s • Multiple	• 2 DCY	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in   ⇒ C3.1 heck", page 14 and/or to appropriate repair manual.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .
T(e)	Engine-Off- Time Comparison Of Engine Off Time From Instrument Cluster Control Unit With Engine After Run Time		Key on after ECM after run time active     CAN active	inode	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to   3 03.6.22 xy- gen Sensor 1 After Catalytic Converter GX7. Checking", page 713.  - If ignition off B+ is lost to ECM, this code will set. Check power and ground inputs to ECM first. Refer to Wiring Diagrams for pin locations. If all power/ grounds to ECM are



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Difference between en- gine-off-time and ECM af- ter-run time > 12.0 s	Key on during ECM after run time active     CAN active			present, re- place the Engine/ Motor Con- trol Module - J623 Refer to appropri- ate repair manual.
P2088 "A" Camshaft Position Actuator Control Circuit Low Bank	tor Intake Short To Ground	• Signal volt- age < 2.15 – 3.25 V	Camshaft valve off     Engine speed > 80 RPM	• 0.5 s • Continuous	• 2 DCY	<ul> <li>Check the Camshaft Position Sensor - G40 Refer to</li> <li>C3.6.3 amshaft Position Sensor G40, Checking", page 674</li> <li>Check the Camshaft Adjustment Valve 1 - N205 Refer to</li> </ul>
	*8dinlessai	noised by Volkewagen /	AG. Volkswagen AG does not	guarantee or accept	2	⊇ C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672
shaft Position Actual tor Conductor Circuit High	VV Actuator Intake Short To Battery Plus	rent > 2.2 A	<ul> <li>Camshaft valve on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	DCY  2 DUMITH respect to the correctness of information in this occ.	- Check the Camshaft Position Sensor - G40 Refer to
	ansemmoor o alevido dilido.	Protected by copyright.	J. D. A. G. O. M. G. W.	Mayu6undoo juauu	information in this occ.	- Check the Camshaft Adjustment Valve 1 - N205 Refer to ⇒ C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2096 Post Cata- lyst Fuel Trim Sys- tean Bank 1	Fuel Sys- tem Out Of Range	• I-portion of 2nd lambda control loop < -0.040 [-] (CBTA) • I-portion of 2nd lambda control loop < -0.030 [-] (CBUA)	Modeled exhaust gas temp. 400 – 1,000° C     Exhaust gas mass flow 18.0 – 180.0 kg/h     Lambda control closed loop     Lambda control not at min or max limit     2nd lambda control closed loop     O2S front ready     O2S rear ready     O2S heater front active	140.0 s     Multiple  Acceptantiability with respect to his own of information in		- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)", page 680 .
	TODALION	Protectedb	.DA nagsweyloV Vdirini.			



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Post Cata- lyst Fuel Trim Sys- tem Too Rich Bank 1	Fuel System Out Of Range	I-portion of 2nd lambda control loop > 0.040 [-] (CBTA)  I-portion of 2nd lambda control loop > 0.030 [-] (CBUA)  CBUA)	<ul> <li>Modeled exhaust gas temp. 400 – 1,000° C</li> <li>Exhaust gas mass flow 18.0 – 180.0 kg/h</li> <li>Lambda control closed loop</li> <li>Lambda control not at min or max limit</li> <li>2nd lambda control closed loop</li> <li>O2S front ready</li> <li>O2S rear ready</li> <li>O2S heater front active</li> <li>Fuel cut off not active</li> <li>Catalyst heating</li> </ul>	• Multiple	• 2 DCY	<ul> <li>Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in</li></ul>
poses, in part or in whole, is not berniting	Junes authorised by	Volkswagen AG. Volks	Catalyst heating swagnot active     SAI not active range	OSP	nect to the correctnes	<ul> <li>Check the Center Oxygen Sensor for Bank 1         Catalytic Converter - G465 Refer to</li> <li>⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680</li> </ul>
Throt- tle Ac- tuator "A" Con- trol Motor Circuit	tuator Rationality Check Throttle Ac-	throttle value angles vs calculated value > 4.0 – 50.0%  • Duty cycle > 80.0%		• 0.5 s • Multiple • 5.0 s • Multiple	infor	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338. Checking", page 726 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue ONESWAGE	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2106 Throt- tle Ac- tuator Con- trol Sys- tem - Force d Limi- ted Power	Throttle Actuator Open Circuit  Throttle Actuator Eunctional Check Throttle Actuator Temperature / Eurrent Monitoring Throttle Actuator Short To Battery Plus & Short To Ground	Internal check  Internal check failed  Internal check	<ul> <li>Duty cycle &gt; 80.0%</li> <li>Or</li> <li>Deviation throttle value angle vs. calculated value &gt; 4.0 - 50.0%</li> </ul>	• f2,0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P2122 Throt- tle/ Pedal Posi- tion Sen- sor/ Switc h "D" Circuit Low	Accelerator Position Sensor 1 Out Of Range Low	• Signal voltage < 0.6 V	A . DA nagewe	• 0.5 s • Continuious, for Manual Man	§S 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670
	Accelerator Position Sensor 1 Out Of Range High	Signal voltage > 4.8 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670
	Accelerator Position Sensor 2 Out Of Range Low	Signal voltage < 0.3 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Throt- tle/ Pedal	Accelerator Position Sensor 2 Out Of Range High	• Signal volt- age > 2.4 V		0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670
Throt- tle/ Pedal	Accelerator Position Sensor 1 And 2 Ra- tionality Check	• Signal volt- age sensor 1 vs. 2 > 0.167 – 0.703 V	<ul> <li>Signal voltage sensor 1 &gt; 445.0 mV</li> <li>Signal voltage sensor 2 &gt; 445.0 mV</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  ⇒ A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sys- tem	Fuel Sys- tem Too Lean @ Part Load	Adaptive val- ue > 28.0%	gine start n.a.  • Engine speed	• 25.0 s • Multiple	• 2 DCY	Check the vacuum lines visually for leaks.
Lean Off Idle Bank 1			RPM • Engine load 25.0 - 46.0%			Check the intake system visually for leaks
			<ul> <li>Mass air flow 45.0 – 300.0 kg/h</li> </ul>			(false air).
	aduness authorised	y Volkswagen AG. Volk	• Or Substitute ECT n.a.  • IAT < 85° C	e or accept		Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
Whole, is not being.			<ul> <li>Ratio manifold pressure to ambient pressure &gt; 0.20 [-]</li> <li>Or</li> </ul>	S lightly will in	99028	C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
part or in			Valve overlap < 40° CRK	$\Lambda$	ct to the cor	Check the     Fuel Injectors. Refer to
purposes, ir			<ul><li>Lambda control closed loop</li><li>Evap purge valve</li></ul>		rectness of	⇒ F3.6.13 uel Injectors, Checking",
ateorommercial	The Colling of the Indiana		1,320 – 4,600 RPM  Engine load 25.0 – 46.0%  Mass air flow 45.0 – 300.0 kg/h  Cor Substitute ECT n.a.  IAT < 85° C  Ratio manifold pressure to ambient pressure to ambient pressure > 0.20 [-]  Or  Valve overlap < 40° CRK  Lambda control closed loop  Evap purge valve closed  If low fuel signal then wait until fuel consumption n.a.	Mon in the light of the light o	informa.	page 694.  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to
	N-IMO	Protected by co	.ĐA nagenealo V voring			⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
						- Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer to ⇒ F3.6.11 uel
						Delivery Unit GX1 / Fuel Pump Relay



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						J17, Checking", page 690  - Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2178 System Too Rich Off Idle Bank 1	Fuel System Too Rich @ Part Load	orcial purposes, in part or in whore	<ul> <li>Time after engine start n.a.</li> <li>Engine speed 1,320 – 4,600 RPM</li> <li>Engine load 25.0 – 46.0%</li> <li>Mass air flow 45.0 – 300.0 kg/h</li> <li>ECT &gt; 59° C</li> <li>Or</li> <li>Valve overlap &lt; 40° CRK</li> <li>Lambda control closed loop</li> <li>Evap purge valve closed</li> </ul>			- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in  C3.1 heck".  Dage 14  and/or to appropriate repair manual.  - Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors. Checking".  Dage 694  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  C1.2 Xygen Sensor 1 Before Catalytic Converter GX10, Checking". Dage 716  - Check the Fuel Delivery Unit - GX1-/Fuel Pump Relay J17 Refer to  F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690  - Check the Intake Manifold Sensor - GX9 Refer to  3.6.15 ntake



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		authorised by Volkswage	<sub>h</sub> A.G. Volkswagen A.G do <sub>es /</sub>	of guarantee or a		Manifold Sensor GX9, Checking", page 698.
	ourposes, Inpart or in whole, is not berning the least of			*00	at any liability with respect to the correctness of	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.
	leiorammoo to alienitho ginik	Roo illentaloo Aqpapago.	Secondary Parameters with Enable Conditions  AG. Volkswagen AG does,	MOVETHEIN VOIM	information in this co	



		Inic			Ox	
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	
Cooling System Performanc e	Coolant System Performance Cooling System Performance Not In A Expect Range	PRINCIPO PURINCIPO PURINCIPO	<ul> <li>Thres_01:</li> <li>Begin of air mass integration when engine temp. 30° C</li> <li>Thers_02:</li> <li>ECT @ start -10 - 60° C</li> <li>AAT &gt; -10° C</li> <li>Fuel cut off not active</li> <li>And</li> <li>Engine load 14.0 - 95.0%</li> <li>Air mass_01:</li> <li>Integrated air mass depending on engine temp. at start and AAT 4.0 - 13.5 kg/h (CBTA)</li> <li>Integrated air mass depending on engine temp. at start and AAT 4.0 - 13.47 kg/h (CBUA)</li> <li>Depending on temp. at engine start and min. observed AAT for longer than 120.0 - 180.0 s</li> <li>Depending on temp. at engine start and min. observed AAT for more than 120.0 - 12.0 kg</li> <li>At time of fault decision:</li> <li>Average air mass flow 35.0 - 280.0 kg/h</li> <li>Average vehicle speed 30 - 120 km/h</li> </ul>	• 2.0 s • Once / DCY	• 2 DCY	Check the Engine Coolant Temperature Sensor G62. Checking". page 683. Checking". page 683. Checking". Page 685. Checking Checking". Page 685. Checking Checking". Page 685. Checking Checking". Page 685. Checking Chec



P2184 Engine Coolant Temperature Sensor Sor Coolant Temperature Sensor Short To Ground Low  P2185 Fan Control Coolant Temperature Sensor Sor Coolant Temperature Sensor Short To Goolant Temperature Sensor Short To Goolant Temperature Sensor Short To Battery / Depen Circuit High
Sor 2 Circuit Low  P2185 En Control Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.  P2185 En Control Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.  P2185 En Control Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.  P2185 En Control Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.  P2185 En Control Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.  P2185 En Control Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.
En- gine Cool- ant Tempera- ture Sensor Short To Battery / Open Cir- cuit High  Coolant Tempera- ture Sensor Short To Battery / Open Cir- cuit  Circuit High  Continu- ous  Collant Tempera- ature Sensor Outlet -G83 Refer to Coolant Tempera- ature Sensor Outlet -G83 Checking", page 685 .
Sensor 2 Circuit High  E3:6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component D agnostic Proc dure	)i- e-
Sys-	Fuel Sys- tem Too	Adaptive val- ue > 5.02%	Time after en- gine start n.a.	• 40.0 s	• 2 DCY	<ul> <li>Check the vacuum</li> </ul>	
tem Too Lean	Lean @ Idle		Engine speed <     860 RPM	Multiple		lines visual for leaks.	ly
at Idle Bank			Mass air flow < 35.0 kg/h			- Check the intake sys-	
1			• ECT > 59° C			tem visually for leaks	y
			• Or			(false air).	
			Substitute ECT n.a.			<ul> <li>Check the fuel pressu and deliver</li> </ul>	
			• IAT < 85° C			quantity. Re	
			Ratio manifold pressure to ambient pressure >			system me- chanical testing in	-
			0.20 [-]			<u>⇒</u> C3.1 heck"	
			<ul><li>Or</li><li>Valve overlap &lt; 40° CRK</li></ul>			page 14 and/or to appropriate re	p-
			Delta part load adaptation ready			pair manua  - Check the	
			Lambda control			Fuel Injec- tors. Refer	to
		oy Volkswagen AG. Vo	Evap purge valve kswaclosed			≓ F3.6.13 uel Injectors, Checking",	
	orised	DYVOIKSW	If low fuel signal then wait until	ž.		page 694 .	
	nless author		fuel consumption n.a.	tee or accept any lie		- Check the Oxygen	
	Eld III.			Oranzlis		Sensor 1 Before Cata	а-
of born				Solling.		lytic Con- verter -	
ole, is n					sayutes	GX10 Re- fer to	
rinwh					pectto	<u>⇒</u> O3.6.23 xy- gen Sensoi	_ _ r
part o					the co	1 Before Catalytic	_
ses, in					rrectr	Converter GX10,	
purpos					less of	Checking", page 716	
nercial					inform	- Check the	
I cornir					8 <i>f</i> :	Fuel Deliv- ery Unit - GX1- / Fue	
976	E			this of		Pump Rela -J17 Refe	ıy
	4010111	` -		· Juguro		to	
	146, 146,	Dank	3,,,	Copyri		<u>⇒</u> F3.6.11 uel Delivery Ur	l hit
	:410	Protected by co.	DA Navesurador Vante			GX1 / Fuel Pump Rela	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						J17, Checking", page 690 .  - Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .





	Monitor Strategy	Malfunction Cri- teria and	Secondary Parameters with Enable	Monitoring Length	MIL fllumina-	Component Diagnostic Proce-
	escription	Threshold Val- ue	Conditions	Time	MIL fllumina-	dure
P2188 Fue Sys- tem	oo <u>D</u> u @ Idle oia\purposes, in part or in whoo	• Adaptive value < -5.02%	gine start n.a.  Engine speed < 860 RPM  Mass air flow < 35.0 kg/h  ECT > 59° C  Or  Substitute ECT n.a.  IAT < 85° C	• 40.0 s • Multiple	· 2 DCY	Check the fuel pressure and delivery quantity. Reter to fuel system mechanical testing in  C3.1 heck", page 14 and/or to appropriate repair manual.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
			Conditions  Conditions	<sub>liksw</sub> agen AG. Vo	lkswagen AG <sub>does</sub>	Manifold Sensor GX9, Checking", page 698  Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to
		al purposes, in part or in w.e.	Sold Maria Country of Children			N80 Refer to  E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.
			TEALITY EUROOS WEINGOON	Profected	SA nagawe	PAIOV WATER THOOD THE THOOD SEE.



Sensors Sensors Sensors Sensor 1 Sensors Signal Biase of 2nd Immoda control loop > 0.055 [-] (.0BTA) Delta lambda control loop > 0.070 [-] (.0BTA)    Sensor 1 Sensor Signal Biase of 2nd Immoda do 12nd Immoda control loop > 0.070 [-] (.0BTA)    Sensor 1 Sensor Signal Biase of 2nd Immoda control loop > 0.070 [-] (.0BTA)    Sensor 1 Sensor Sensor 1 Sensor Sensor 1 Sensor 1 Sensor 1 Sensor Sensor Sensor Sensor Sensor Sensor Sensor	DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Sank   1   180.0 kg/h   180.	O2 Sen- sor Signal Biase d/ Stuck	Sensors Front Out Of Range	da of 2nd lambda control loop > 0.065 [-] (CBTA)  Delta lamb-	gas temp 400 – 1,000° C  • Delta engine load < 12.0%  • Exhaust gas		• 2 DCY	Sensor 1 Before Cata- lytic Con- verter - GX10 Re-
Case 1:  1st lambda control loop not at min or max limit  2nd lambda control loop active  Case 2:  1st lambda control loop at min limit  O2S front < 1.0  [-]  O2S rear voltage < 0.4 V  Case 3:  1st lambda control loop at max limit  O2S front > 1.0  [-]  O2S rear voltage < 0.4 V  Case 3:  1st lambda control loop at max limit  O2S front > 1.0  [-]  O2S rear voltage < 0.4 V	Bank 1 Sen-		lambda con- trol loop > 0.070 [-]	<ul> <li>180.0 kg/h</li> <li>Lambda control closed loop</li> <li>2nd lambda control closed loop</li> <li>O2S front ready</li> <li>O2S rear ready</li> <li>O2S heater front ready</li> <li>O2S heater rear ready</li> <li>Fuel cut off not active</li> <li>Catalyst heating not active</li> </ul>			Catalytic Converter GX10, Checking", page 716  - Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay
Literal Rivers	in part or in	ate of commercial transfer and the state of some state of	toriset by Volkswagen	<ul> <li>Case 1:</li> <li>1st lambda control loop not at min or max limit</li> <li>2nd lambda control loop active</li> <li>Case 2:</li> <li>1st lambda control loop at min limit</li> <li>O2S front &lt; 1.0 [-]</li> <li>O2S rear voltage &lt; 0.4 V</li> <li>Case 3:</li> <li>1st lambda control loop at max limit</li> <li>O2S front &gt; 1.0 [-]</li> <li>O2S rear voltage &lt; 0.6 V</li> </ul>	9uarantee or accept	and liability with respect to the correctness of information in this	
3. Diagnosis and Testing		Hata Birato	Protected by copyright, C	JKewagen AG.	West Copyright	3. Diagno	



DTC / Monitor De- scrip- tion Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2196 O2 Sensors Sensors Front Out Of Range  Stuck Rich Bank 1 Sensor 1	Delta lambda of 2nd lambda control loop < -0.065 [-] (CBTA)     Delta lambda of 2nd lambda control loop < -0.070 [-] (CBUA)	Modeled exhaust gas temp 400 – 1,000° C  Delta engine load < 12.0%  Exhaust gas mass flow 18.0 – 180.0 kg/h  Lambda control closed loop  2nd lambda control closed loop  O2S front ready  O2S heater front ready  Catalyst heating not active  Catalyst heating not active  Case 1:  1st lambda control loop not at min or max limit  2nd lambda control loop active  Case 2:  1st lambda control loop at min limit  O2S front < 1.0  Case 3:  1st lambda control loop at max limit  O2S front > 1.0  Case 3:  O2S front > 1.0  Case 3:  O2S front > 1.0  Cose 3:	• Multiple	• 2 DCY  Volkswagen AG do	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to
		. ADINAD	Protectedbyc	.DArnage	WEATION YOUNDIN



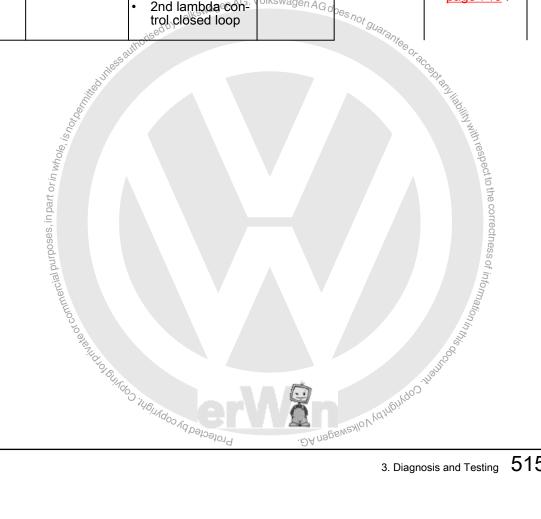
DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- sor Posi- tive Cur- rent Con- trol Cir-	Oxygen Sensors Front Open Circuit Pump Cur- rent (IP)	<ul> <li>O2S signal front &lt; 1.70 V</li> <li>And</li> <li>Fuel cutoff &gt; 3.0 s</li> </ul>	<ul> <li>O2S ceramic temp &gt; 720° C</li> <li>Electrical adjustment not active</li> <li>Heater control closed loop</li> <li>Evap purge valve ready</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  3 O3.6.23 xy- gen Sensor
isnotbomit	auntes authorised b	• And • Delta lambda controller > 0.10 [-]	<ul> <li>Ceramic temp &gt; 720° C</li> <li>Lambda modula tion &gt; 0.02 [-]</li> <li>Lambda control closed loop</li> <li>Heater control closed loop</li> </ul>	of accepted light with		1 Before Catalytic Converter GX10, Checking", page 716
R2243 O2 Sen- sor Refer- ence Volt- age Cir- Cir- Cipen Bank Sen- sor	Oxygen Sensors Front Open Circuit Nernst Volt- age (UN)	<ul> <li>O2S signal front &gt; 4.70 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> <li>O2S signal front &lt; 0.20 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> </ul>	Heater control active	• 25.5 s • Multiple	2 DCV	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P2251 O2 Sen- sor Nega- tive Cur- rent Con- trol Cir- cuit/ Open Bank 1 Sen- sor 1	Oxygen Sensors Sensors Front Open Circuit Virtual Mass (VM)	<ul> <li>O2S signal front 1.47 –</li> <li>1.53 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> </ul>	<ul> <li>Modeled exhaust gas temp ₹750 Ω γ μαθελίπος ₹750</li> <li>No fuel cutoff &gt; 2.0 s</li> <li>Heater control active</li> </ul>	• 30.5 s	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2257 AIR Sys- tem Con- trol "A" Circuit Low	Air Pump Relay Short To Ground	Signal volt- age < 3.0 V  Add Volkewagen AG. V  Bed by V  Bed	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	O.5 s Continuous	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Sec- ondary Air Injection Pump Motor -V101 Re- fer to
orin whole, is <sub>not</sub> .	in the state of th		Engine speed > 80 RPM  /olkswagen AG does not gua  Pump relay com-	or accepted to like	with respect to the	⇒ S3.6.24 eco ndary Air In- jection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719
AIR Sys- tem Con- trol "A" Circuit High	Relay Short To Battery Plus	rent 0.60 – 1.20 A	Pump relay commanded on     Engine speed > 80 RPM      The speed > 80 RPM      Mass air flow	• 0.5 s • Continuous	OC Correctness of information in the	- Check the Secondary Air Injection Pump Relay -J299- / Sec- ondary Air Injection Pump Motor -V101 Re- fer to
	SHO OF BUILDOO 146	Protected by copyr	oy Volkswagen AG.	uondoo jaahoos		⇒ S3.6.24 eco ndary Air In- jection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719
Biase d/ Stuck	Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean:	O2S signal rear not os- cillating at reference < 600.0 mV	<ul> <li>Mass air flow 22.0 – 120.0 kg/h (CBTA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s (CBTA)</li> <li>2nd lambda control closed loop</li> </ul>	• 210.0 s (CBTA) • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 20.0 - 30.0% Closed Loop Enrichment) (CBUA)		<ul> <li>Mass air flow 30.0 – 120.0 kg/h (CBUA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 10.0 s (CBUA)</li> <li>2nd lambda control closed loop</li> </ul>	80.0 s (CBUA)     Multiple		- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.
O2 Sen- sor Signal Biase d/ Stuck Rich Bank 1	Oxygen Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% En- leanment) If Enlean- ment Is Not Successful: Waiting For Next Fuel Cut Off (CBTA)	(CBTA)  O2S signal rear not oscillating at reference > 600.0 mV	<ul> <li>(CBTA)</li> <li>Mass air flow 22.0 – 120.0 kg/h (CBTA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s (CBTA)</li> <li>Fuel cut off &gt; 3.0 s</li> <li>2nd lambda control closed loop</li> </ul>	<ul> <li>210.0 s (CBTA)</li> <li>Multiple</li> </ul>	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to





DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen Sensors Rear (Bina- ry Check Of Response Time At Fuel Cut Off (CBTA)	<ul> <li>(CBTA)</li> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 7,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>(CBTA)</li> <li>Rich voltage (enable) &gt;= 548.0V</li> <li>Lean voltage &lt;= 191.0V</li> <li>O2S rear ready</li> <li>Rear O2-sensor signal oscillating</li> <li>Monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2-Sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>	• 6.0 s (CBTA) • Multiple	swagen AG does no	* guarantee or acceptan, like
	Oxygen Sensors Rear 2 - Point - LSF Stuck Rich (If Sensor Stuck Rich: 7.0% - 15.0% Closed Loop En- leanment) If Enlean- ment Is Not Successful: Waiting For Next Fuel Cut Off (CBUA)	oo mercial purposes, in part o	Mass air flow 30.0 – 120.0 kg/h (CBUA)  Modeled exhaust	• 80.0 s (CBUA) • Multiple		- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen Sensors Rear (Bina- ry LSF) Check Of Response Time At Fuel Cut Off (CBUA)	<ul> <li>(CBUA)</li> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 4,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	valve diagnosis ready  O2S front ready  Fuel cut off active  Front O2 - sensor lambda signal > 4.0 [-]  Modeled exhaust gas temp. > 480° C  Slope of exhaust mass < 50.0 kg/h	• 4.5 s (CBUA) • Multiple	** ** ** ** ** ** ** ** ** ** ** ** **	
Biase d/ Stuck	Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 30.0% En-	O2S signal rear not oscillating at reference < 600.0 mV  Output  Outp	<ul> <li>Mass air flow 22.0 – 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readi-</li> </ul>	• 210.0 s • Multiple	Y with respect to the correctness of information	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)". page 680.



De- scrip- tion Strategy Description	teria and Threshold Val- ue	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2275 Oxygen O2 Sensors Sensor Rear 2 - sor Point - LSF Signal Stuck Rich Biase d/ Stuck Rich: 7.0% Enleanment) If Bank 1 Enleanment Is Not Sensor 3 Waiting For Next Fuel Cut Off	O2S signal rear not os- cillating at reference > 600.0 mV	<ul> <li>Mass air flow 22.0 – 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s</li> <li>Fuel cut off active</li> <li>2nd lambda control closed loop</li> </ul>	• 210.0 s • Multiple	• 2 DCY	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking
Oxygen Sensors Rear (Bina- ry LSF) Check Of Response Time At Fuel Cut Off	<ul> <li>Response time at fuel cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 7,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>Rich voltage (enable) &gt;= 548.0V</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>		Ot guarantee or acceptal	bility with respect to the correct



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val-si oks <sup>wag</sup> ue	Secondary Parameters with Enable Vagen Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2279 MAP/ MAF - Throt- tle Po- sition Corre- lation	Leak to in- take Mani- fold Adap- tation Value Monitoring	Offset value throttle mass flow > 13.0 kg/h	0424	*ROBRANI BOLLIN MITTER PROCESSION	athe correctnes	Check for air leaks near the throttle body, oil fill cap not tight or oil dipstick not seated in tube. Also check for any engine gaskets that can cause additional air to enter the crankcase can set this fault as the PCV system is not metered. If a vacuum leak or crankcase seal is the cause, the idle may be rough or unstable.  Check the Intake Manifold Sensor GX9 Refer to  Manifold Sensor GX9, Checking", page 698.  Check the Throttle Valve Control Module GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.  Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  T3.6.10 VAP Canister Purge Regulator Valve 1 - N80 Refer to  T3.6.10 VAP Canister Purge Regulator Valve 1 - N80 Refer to  T3.6.10 VAP Canister Purge Regulator Valve 1 - N80 Refer to  T3.6.10 VAP Canister Purge Regulator Valve 1 - N80 Refer to

Jetta, Jetta SportWagen, Golf, Passat 2010 Jetta SportWagen, Golf, Passat 20

DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	1016, is,					lator Valve 1 N80, Check- ing", page 688
P2300 Igni- tion Coil "A" Pri- mary Con- trol Circuit Low	Ignition Coils Short To Ground Ignition	• Signal current > 24.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to 13.6.14 gnition Coils With Power Output Stage. Checking",
P2301 Igni- tion Coil "A" Pri- mary Con- trol Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age ≥ 5.1 – 7.0 mA	• Engine speed > 680 RPM	• 0.5 s Continuous OA NONKENISGEN YES	· 2 DCYIO	page 696.  - Check the Ignition Coils with Power Output Stage. Refer to     3.6.14 gnition Coils With Power Output Stage. Checking",
P2303 Igni- tion Coil "B" Pri- mary Con- trol Circuit Low	Ignition Coils Short To Ground	Signal current > 24.0 mA	Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	page 696.  - Check the Ignition Coils with Power Output Stage. Refer to    3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P2304 Igni- tion Coil "B" Pri- mary Con- trol Circuit High	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to    3.6.14 gnition Coils With Power Output Stage, Checking", page 696



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2306 Ignition Coil "C" Primary Control Circuit Low	Ignition Coils Short To Ground	Signal current > 24.0 mA	<ul> <li>Engine speed &gt; 680 RPM</li> </ul>	<ul> <li>0.5 s</li> <li>Continuous</li> </ul>	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P2307 Igni- tion Coil "C" Pri- mary Con- trol Circuit High	Ignition Coils Short To Battery Plus	• Signal volt	• Engine speed > 680 RPM	• 0.5 s • Continuous	2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  □ 3.6.14 gnition Coils With Power Output Stage. □ Checking". □ page 696
P2309 Ignition Coil "D" Primary Control Circuit Low	Coils Short To Ground	• Signal current > 24.0 mA	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	Check the lignition Coils with Power Output Stage. Refer to ⇒ 13.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P2310 Ignition Coil "D" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal volt - ∞ age > 5.1 – 7.0 mA	Engine speed > 680 RPM	• 0.5 s <sub>lo</sub> h <sup>o</sup> Continu- ous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Igni- tion Coil "E" Pri- mary	Ignition Coils Short To Ground	Signal cur- rent > 24.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the Ignition Coils with Power Output Stage. Refer to</li> </ul>
Con- trol Circuit Low						13.6.14 gni- tion Coils With Power Output Stage, Checking", page 696
Igni- tion Coil "E" Pri- mary	Ignition Coils Short To Battery Plus	• Signal volt- age > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	<ul> <li>Check the Ignition Coils with Power Output Stage. Refer to</li> <li>⇒ I3.6.14 gni-</li> </ul>
Con- trol Circuit High			4//			tion Coils With Power Output Stage, Checking", page 696
P2400 EVAP Sys- tem Leak De- tec- tion Pump Con- trol Cir- cuit/	LDP Open Circuit	• Signal volt- age > 4.40 – 5.60 V	<ul> <li>LDP commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.
Open			or commercial purposes.			- Check the Leak Detection Pump - V144 Refer to  3.6.19 eak Detection Pump V144.
			ingingle or commercial purposed	Protectedby	Nagen AG.	Pump V144, Checking (4 Pin)", page 170 706



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2401 EVAP System Leak Detection Pump Control Circuit Low	LDP Short To Ground	• Signal volt- age < 2.15 – 3.25 V	<ul> <li>LDP commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  \$\frac{\text{2}}{\text{L3.6.18 eak}}\$ Detection Pump V144, Checking (3) Pin)", page \$\frac{704}{\text{2}}\$.
Low			855 authorised by Volkswagen A	∖G. Volkswagen /	AG does not guarante	- Check the Leak Detection Pump - V144 Refer to  2.3.6.19 eak Detection Pump V144, Checking (4 Pin) page 706
	LDP Short To Battery Plus	Signal Sand or in mart or in more commercial purposes, in part or in more commercial purposes, in part or in more commercial purposes.	• LDP commanded on • Engine speed > 80 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704  - Check the Leak Detection Pump - V144 Refer
		97,	Protected by Qoo Yd besteeld Protected by Good Street British Good Bri	. DA	negewaylo Vydł ngin	L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2403 EVAP Sys- tem Leak De- tec- tion Pump Sense Cir- cuit/ Open	ality Check Unable To Close	• Low signal voltage > 0.5 s	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>Integrated purge flow &gt; 29.90 g</li> <li>Restart temperature difference &gt; 52 K</li> <li>Volleigle speed &gt;= 0 km/h</li> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> </ul>	• 0.5 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144. Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144. Checking (4 Pin)", page 706 .
Whole ;	MODIO POLICIO		<ul><li>Evap purge valve ready</li><li>LDP commanded off</li></ul>		liability with respect	
P2404 EVAP Sys- tem Leak De- tion Pump	Reed Sensor Rationality Check Unable To Open	High signal voltage > 12.0 s  And  Number of checks 30.0 [-]	<ul> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>Intake manifold vacuum &gt; 2,560.0 hPa</li> <li>Restart temperature difference &gt; 52 K</li> <li>Vehicle speed &gt;= 0 km/h</li> </ul>		• 2 2 Phe correctness of information in this a	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
		Cumulative time of high signal volt- age during pumping > 10.0 s	<ul> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Evap purge valve closed, ready</li> <li>LDP commanded on</li> </ul>	• 120.0 s • Once / DCY Jolkswagen AG.	/olkswagen AG doe	s not gualantee or accepte	
P240 A EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Cir- cuit/ Open	EVAP Leak Detection Pump Open Cir- cuit	age > 4.7 – 5.4 V	Evap pump heater commanded off  Off  Off  Off  Off  Off  Off  Off	• 0.5 s • Continuous	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144	liability of the first of the f
P240 B EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Circuit Low	EVAP Leak Detection Pump Short To Ground	age < 2.74 –	Evap pump heater commanded off     THOMAGO.	• 0.5 s • Continuous	• 3 DCA	- Check the Leak Detection Pump - V144 Refer  ≥ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P240 C EVAP Sys- tem Leak De- tec- tion Pump Heat- er Con- trol Circuit High	EVAP Leak Detection Pump Short To Battery Plus	• Signal current > 2.2 – 4.0 A	Evap pump heater commanded we would be commanded with the sauthorised of the commanded with the commanded with the command of the commanded with the commanded w	• Continuous		- Check the Leak Detection Pump - Val44 Refer to  Lase Detection Pump V144 Checking (3 Pin)", page 704, or  Lase 19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.
		eionmmercia	Soled In the Indiana Sheling of the Indiana you have the Indiana of the Indiana o	Sejo19	Janagen A.G.	Checking (3 Pin)", page 704, or E3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	ters with Enable	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2407 EVAP Sys- tem Leak De- tec- tion Pump Sense Circuit Inter- mit- tent/ Erratic	Detection Pump Sig- nal Check During En- gine Off	of evap pump cur- rent during reference measure- ment > 1 mA  Or Drop of evap pump cur- rent during pump phase > 6 mA For time 3.0 s	<ul> <li>start &lt;= 15 K</li> <li>Ambient air temperature &lt; 35; &gt; 4° C</li> <li>Altitude &lt;= 2700 m</li> <li>Time since en-</li> </ul>	• 800.0 s • Once / DCY	• 2 DCY	Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2414 O2 Sen- sor Ex- haust Sam- ple Error Bank 1 Sen- sor 1	Oxygen Sensors Front Sig- nal Range Check (Check For Sensor At Ambient Air)	<ul> <li>Threshold 1:</li> <li>Signal voltage 3.10 – 4.77 V</li> <li>Threshold 2:</li> <li>Signal voltage 2.50 – 3.06 V</li> <li>Depending on gain factor that actual is used for sensor</li> </ul>	<ul> <li>1.6 [-]</li> <li>O2S ceramic temp. &gt; 715° C</li> <li>Fuel cut off not active</li> <li>Heater control closed loop</li> <li>SAI not active</li> <li>If low fuel signal then wait &gt; 0.0 s</li> </ul>	• 15.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  3 O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
P2431 AIR System Air Flow/ Pressure Sensor Circuit Rang e/ Performanc e Bank 1	Air System Pressure Sensor Ra- tionality Check	Difference between SAI pressure and ambient pressure not (-60.0 – 60.0 – hPa	SALdone  AG. VOIKS  addy  Volks  AG. VOIKS  The second of the secon	• Once / DCY	• 2 DCY  Of guaranice Or acceptal	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  S3.6.25 econdary Air Injection Sensor 1 G609. Checking". page 721.
P2432 AIR System Air Flow/ Pressure Sensor Circuit Low Bank 1	Air System Pressure Sensor Sig- nal Range Check	Signal voltage > 4.5 V	Protected by copyri	• 0.5 s • Continuous	· 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609. Checking", page 721.  - Check the Secondary
P2433 AIR System Air Flow/ Pressure Sensor Circuit High Bank 1	Air System Pressure Sensor Sig- nal Range Check	Signal voltage > 4.5 V		0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P2440 AIR System Switc hing Valve Stuck Open Bank 1	Air System Check After SAI	SAI pressure measured with SAI pressure sensor vs. modeled while SAI valve closed < 65.0%  **Output Office of the Control of	Secondary Parameters with Enable Conditions  • ECT 5 – 108° C  • IAT 5 – 100° C  • Altitude < 2,700.0 m  • SAI pressure sensor ready  **THOMAGO THOMAGO THOMAG	• 45.0 s • Once / DCY		V101, Checking", page 719.
			J/q/paj	Proteg	.DAnagenAsylov	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	ing Engine	Evap pump current dif- ference be- tween refer- ence meas- urement to idle <= 3 mA	<ul> <li>Engine temperature @ engine start &gt;= 4° C</li> <li>Difference between ECT and IAT @ engine start &lt;= 15 K</li> <li>Ambient air temperature &lt; 35; &gt; 4° C</li> <li>Altitude &lt;= 2,700 m</li> <li>Time since engine start in preceding dcy &gt;= 600.0 s</li> <li>Change in battery voltage during monitoring &lt; 1.0 V</li> <li>Engine off time &gt;= 5.0 s</li> <li>Vehicle speed 0 km/h</li> </ul>	• 13.5 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.
		or commercial purposes, in part or in whole, is not.	<ul> <li>Evap purge adaptation &lt; 5.0 [-]</li> <li>No sudden change in evap pump current (filling event) &lt; 2;</li> <li>T mA</li> <li>Deviation of filtered evap pump current during reference measurement within range &lt;= 1.0 mA</li> <li>Change in relative evap pump current during monitoring n.a.</li> <li>Within time n.a.</li> <li>(During ECM keep alive-time after ignition off, max. time) &lt; 900.0 s</li> <li>Airbag not activated</li> <li>(After MIL illumination because of any EVAP leakage the mon-</li> </ul>		ragen AG does not g	Marantee of acceptany library as peculiar in the sepection of the sepectio



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	/agen, Golf, Pas Scan Tool - Edit MIL Illumina- tion	Compo agnost
O2 Sen- sor	Oxygen Sensors Front Open Circuit Ad- justment Voltage (IA)	O2S signal front > 4.77 V	itor is only activated every) 1 dcys  • Modeled exhaust temp. < 750° C  • O2S ceramic temp. > 720° C  • Fuel cut off active  • Heater control closed loop  • If low fuel signal then wait > 0.0 s.	• Multiple  Muchness of information in this a	• 2 DCY	- Che Oxy Sen Befo lytic vert GX' fer t  3 3 gen 1 Be Cata Con GX'
P3081 Engine Coolant Temperature Sensor 1	Engine Coolant Temperature Sensor Rationality Measured Engine Coolant Temp. Be- low Reference Model	Range_01:  • Measured engine cool- ant temp. not within in a range of the refer- ence model > 11 K	*Modmax_01:  • Maximum reference temperature 60° C	• 4.0 s • Multiple	• 2 DCY	Che pag  - Che Eng ant atur -G6 to  E3.0 Coc Ten Sen Che pag
	CAN: CAN- Bus Read- ing Back Sent Mes- sage (Pow- ertrain)	CAN message no feedback	Time after ignition on 500.0 ms	• 250.0 ms • Continuous	• 2 DCY	- Che CAI tern sist: Ref <u>⇒</u> C3. Bus nal anc Che
U000 2 High Speed CAN Com- muni- cation Bus Per- for- manc	Bus CAN Communi-	Global time out receiving no message	Time after ignition on 500.0 ms	• 450.0 ms • Continuous	• 2 DCY	- Che CAI terr sist Ref ⊇ C3. Bus nal and Che pag



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U010 1 Lost Com- muni- cation with TCM	CAN: TCM CAN Com- munication With TCM	Received CAN mes- sage no message  Message  Authorised by Voll  Redunders authorised by Vol	Time after ignition on 500.0 ms  AG. Volkswagen AG.  Time after igni-	• 500.0 ms • Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance between the Transmission Control Module to the Engine/ Motor Control Module - J623 Refer to  ⇒ C3.6.5 AN-Bus Terminal Resistance, Powertrain, Checking", page 678.
U012 1 Lost Communication With Anti- Lock Brake System (ABS) Control Module "A"	Unit ĈAN Communi- cation With	Received CAN message no message      Received CAN message      Received CAN message no message	tion on 500.0 ms	ms • Continu-	• 2 DCY	CAN-Bus terminal re- sistance.
U014 6 Lost Com- muni- cation With Gate- way "A"	CAN: Gate- way CAN Communi- cation With Gateway	Received CAN mes- sage no message	Time after ignification on 500.0 ms	• 1,000.0 ms • Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U015 5 Lost Communication With Instrument Panel Cluster (IPC) Control Module	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	Received     CAN mes-     sage no     message	Time after ignition on 500.0 ms	500.0 ms     Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to   C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
U030 2 Soft- ware In- com- pati- bility With Trans- mis- sion Con- trol Mod- ule	CAN: TCM CAN Com- munication With TCM	Received AT vehicle data and TCM signal	Time after ignition on 500.0 ms	100.0 ms     Continuous	Poudrantee Orace Brand	- Check for software updates and TSB's. Reprogram as necessary. If none are found, replace the Transmission Control Module. Refecto appropriate repair manual.
U040 2 Invalid Data Re- ceived From TCM	With TCM	Received data implausible message      Speed sensor signal: initialization	• Time after ignition on 500.0 ms	• 60.0 ms • Continuous	• 2 DCY • 2 DCY	- Check for software updates and TSB's. Reprogram as necessary. If none are found, replace the Transmission Control Module. Refer to appropriate repair manual.
	CAN: Vehicle Speed Sensor CAN Communication With Vehicle Speed Sensor	<ul> <li>Speed sensor signal: initialization error 327.08 km/h</li> <li>Speed sensor signal: low voltage error 327.25 km/h</li> </ul>	r⊶d	• 1,980.0 ms	• 2 DCY	<ul> <li>Check the CAN-Bus terminal resistance. Refer to</li> <li>C3.6.4 AN-Bus Terminal Resistance, Checking", page 676</li> <li>Check the vehicle</li> </ul>



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Mod- ule "A"		<ul> <li>Speed sensor signal: sensor error 327.42 km/h</li> <li>Vehicle speed &gt;= 325 km/h</li> <li>Speed sensor signal: out of range 326.39 km/h</li> </ul>		<ul> <li>480.0 ms</li> <li>Continuous</li> <li>2,100.0 ms</li> <li>Continuous</li> <li>480.0 ms</li> <li>Continuous</li> </ul>		speed signal. Refer to  ⇒ V3.6.29 ehicle Speed Signal, Checking", page 729
	CAN: Brake Unit CAN Communi- cation With Brake Unit	Received data implausible mesage  sage  Activities  Received  Sage  Sage	Time after ignition on 500.0 ms  olkswagen AG does not guan.	60.0 ms     Continuous		
Data Re-	CAN: Ambient Air Temperature Sensor Communication With Instrument Cluster Module	Ambient temperature value (initial- ization) 0.0 h [-]	<ul> <li>Key on</li> <li>Status ambient temperature from instrument clus- ter no fault</li> <li>Electrical check ambient temper- ature sensor no fault</li> </ul>	• 3.0 s • Multiple	• 2 DCY	<ul> <li>Check for software up- dates and TSB's. Re- program as necessary. If none are found, re- place the Body Control Module. Re- fer to appro- priate repair manual.</li> </ul>
Data Re- ceived From Instru-	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	Received CAN mes- sage implau- sible mes- sage	Time after ignition on 500.0 ms	• 600.0 ms • Continuous	• 2ess of information in	Check for correct soft-ware version and VIN or update soft-ware for the IPC Module if available.      Correct soft-ware for the IPC Module if available.
ment Panel Clus- ter Con- trol Mod- ule	CAN: Ambient temperature value (initialization) 0.0 h [-] cation With Instrument Cluster Module (CBTA)	Status ambient temperature from instrument cluster no fault     Electrical check ambient temperature sensor no fault	3.0 s go     Multiple		If OK, re- place the In- strument Cluster Con- trol Module - J285 Refer to appropri- ate repair manual.	



DTC / De- scrip- tion	Monitor Strategy Description	Malfunction Cri- teria and Threshold Val- ue	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U044 7 Invalid Data Re- ceived From Gate- way "A"	CAN: Gate- way CAN Communi- cation With Gateway	Received data implau- sible mes- sage	Time after ignition on 500.0 ms	<ul><li>300.0 ms</li><li>Continuous</li></ul>	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.

## Engine/Motor Control Module, 2014 MY 3.4.5

P000 VVT Actua- A tor Intake  A "A" Slow Re- Cam sponse shaft Position vs. actual position vs. actual position vs. shaft Position vs. actual posit	DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	A "A" Cam shaft Position Slow Respon se Bank	tor Intake Slow Responses, in part or in whole, is not on in whole, is not one of the state o	tween target position vs. actual position > 8 - 12° CRK (CBTA)  Difference between target position vs. actual position > 8° CRK (CBUA)  Adjustment angle > 3° CRK	gine start > 1.5 – 3.0 s  • Engine speed 600 – 6,320 RPM  • Oil temperature –48 – 143° C  • Frequency (normal operation) 7.0 times [-] (CBTA) agen AG does also described by the companion of the	• 12.0 s (CBUA) • Multiple  * not guarantee or at	Contraction in this country with respect to the correctness of information in this country with respect to the correctness of information in this country with the contraction in the country with the contraction in the cont	Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205. Checking". page 672 .  - Check the Camshaft Position Sensor - G40 Refer to ⇒ C3.6.3 am- shaft Posi- tion Sensor G40, Check- ing", page 674 .  - Check the Engine Speed Sen- sor -G28 Refer to ⇒ E3.6.9 ngine Speed Sen- sor G28. Checking". page 686 .

<b>(X)</b>		a SportWagen, Gol can Tool - Edition (	f, Passat 2010 ➤ 07.2022	sed by Volkswage	n AG. Volkswagen A	G does not guarantee
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P001 0 "A" Cam shaft Posi- tion Ac- tua- tor "A" Con- trol Cir- cuit/ Ope n Bank 1	VVT Actua- tor Intake Open Cir- cuit	• Signal voltage > 4.40 – 5.60 V	Camshaft valve of off of the control of the co	• 0.5 s • Continuous	• 2 DCY	- Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 amshaft Adjustment Valve 1 N205. Checking", page 672.  - Check the Engine Speed Sensor -G28 Refer to ⇒ E3.6.9 ngine Speed Sensor 'G28, Checking", page 686.  - Check the Camshaft Position Sensor - G40 Refer to

C3.6.3 am-shaft Position Sensor G40, Checking", page 674



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P001 1 "A" Cam shaft Position - Tim ing Over -Ad- vanc ed or System Perfor- man ce Bank 1	tor Intake Target Er- ror	Difference between target position vs. actual position > 8 - 12° CRK (CBTA)     Difference between target position vs. actual position > 8° CRK (CBUA)     And     Adjustment angle > 3° CRK  CRK	gine start > 1.5 – 3.0 s  Engine speed 600 – 6,320 RPM  Oil temperature –48 – 143° C  Frequency (normal operation) 7.0 times [-] (CBTA)  Frequency (normal operation) 4.0 times [-] (CBUA)  Or (CBTA)  Frequency (CSM) 1.0 times [-] (CBTA)	21.0 (CBTA)     12.0 s (CBUA)     Multiple	• 2 DCY	- Check the Camshaft Adjustment Valve 1 - N205 Refer to
orcial purposes, in part or in wh	Lammoo to agent do danger of the community of the communi	Protected by copyright,	JA olkswagen AG.	quifuldo Tialingo	n respect to the correctness of information in this	



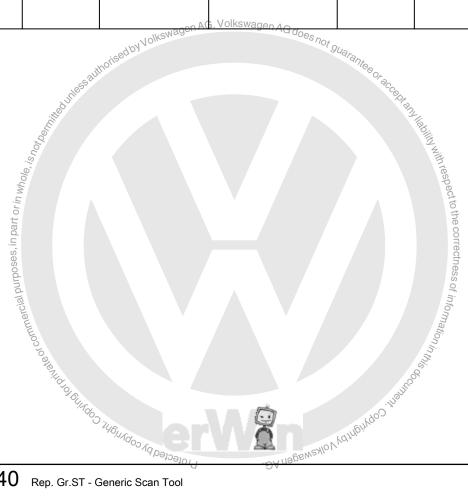
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
kshaf t Po-	Camshaft Position Sensor In- let Angular Offset Check	<ul> <li>Permissible deviation &lt; -13.5° CRK</li> <li>Or</li> <li>Permissible deviation &gt; 13.5° CRK</li> </ul>		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sensor -G28 Refer to  ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686.
rela- tion Bank 1 Sen- sor A						<ul> <li>Check the Camshaft Position Sensor - G40 Refer to</li> </ul>
		os surhorise	gbyVolkswagen AG. Volkswa	agen AG does not	gu <sub>arantee or</sub> aç	C3.6.3 am- shaft Posi- tion Sensor G40, Check- ing", page 674
		ole, is not bermited.		7	18 P.	- Check the Camshaft Adjustment Valve 1 - N205 Refer to
D003	2 2 2. 0					1 N205, Checking", page 672
0 HO2 S Heat er Con- trol	Concoro	Heater voltage 2.34 – 3.59 V	<ul> <li>Time after engine start &gt; 5.0 s</li> <li>Heater commanded off</li> </ul>	Continuous	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to
Cir- cuit Bank 1 Sen- sor 1		age 2.34 – 3.59 V	doo Vd bested by	Olkswagen AG.	May May May Supering S	⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P003 1 HO2 S Heat er Control Cir- cuit Low Bank 1 Sen- sor 1		Heater voltage < 2.34 V  sauthorised by Volkswage  sauthorised by Volkswage	Time after engine start > 5.0 s Heater commanded off  AG. Volkswagen AG does n  Time after en-	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking",
P003 2 HO2 S Heat er Control Circuit High Bank 1 Sensor 1	Oxygen Sensors Heater Front Short To Battery Plus	age > 3.59 V	Time after engine start > 5.0 s Heater commanded on	• 0.5 s • Continuous	• <b>2</b> OCUME To the correctness of information in this oculing	page 716.  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  - O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
	H <sub>d</sub> <sub>Q</sub> Q <sub>l</sub>	Jago julginados Agos jos julginados Agos julginados Agos julginados Agos julginados Agos julginados	A DA nageway	MONTANDINGO THE	Jugot Comment	



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
6 HO2 S	Oxygen Sensors Heater Rear 2 - Point - LSF Open Cir- cuit	• Heater voltage 4.50 – 5.50 V	<ul> <li>Engine speed &gt; 80 RPM (CBTA)</li> <li>Time after engine start &gt; 5.0 s (CBUA)</li> <li>Heater commanded off</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .





DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
HO2 S Heat	Rear 2 - Point - LSF	Heater voltage < 3.0 V	Engine speed > 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Adheater commanded off	• 0.5 s • Continuous  not guarantes or acc	• 2 DCY	<ul> <li>Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to</li> <li>→ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.</li> <li>Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to</li> <li>→ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to</li> <li>→ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.</li> </ul>
		ofected by copyright,	n'9 - ĐA nagswa	2410 V Valnoir		



DTC / De- script ion		Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
8 HO2 S Heat er	Oxygen Sensors Heater Rear 2 - Point - LSF Short To Battery Plus	Heater current 2.70 –     5.50 A  Heater current 2.70 –     5.50 A	Engine speed > 80 RPM (CBTA)     Time after engine start > 5.0 s (CBUA)     Heater commanded on  Olimon indicated by Volks Wagen (CBUA)  Olimon indicated by Volks Wagen (CBUA)	O.5 s     Continuous  AG. Volkswagen.	• 2 DCY	G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465. Checking (CRUA)"
		or commercial purpos	Protected by copyright, Copyrig	, je.	л пэр в мэд о V ка тай	page 680 ectnoss of information in this experience of the control



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
2 HO2 S	Oxygen Sensors Heater Rear 2 - Point - LSF Open Cir- cuit	Heater voltage 4.50 –     5.50 V	Engine speed > 80 RPM     Heater commanded off	0.5 s     Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.
		ilikadunas saumorised by Vol	<sub>(SW</sub> agen AG. Volkswagen A	adoes not guarani	Se Or RCC BOT AND THE BEILE	Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.
	or commercial purposes, in part or in whole, is not	Sering to British of State of	Datected Salva Sal		dilly with respect of the state	o to the correctness of in



P004 C	Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Proce
3 S HO2 F S R Heat P er S Con- G	Rear 2 - Point - LSF Short To Ground	Heater volt- age < 3.0 V	Engine speed > 80 RPM     Heater commanded off	0.5 s     Continuous	• 2 DCY	- Check the Oxygen Sensor 1 A ter Catalytic Converter GX7 Refe to  D3.6.22 xygen Sensor 1 After Catalytic Converter GX7 Checking", page 713.
Softing of the state of the sta	ess authorised by	yolkswagen AG. Volksw	agen AG does not guarantee of	accept and liability with respect to the	100 COL	- Check the Center Oxy gen Sensor for Bank 1 Catalytic Converter - G465 Ref to ⇒ C3.6.6 er ter Oxygen Sensor for Bank 1 Catalytic Converter G465 Checking (CBUA)". page 680



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P004 4 HO2 S Heat er Con- trol	0 - 1	• Heater cur- rent 2.70 – 5.50 A	<ul> <li>Engine speed &gt; 80 RPM</li> <li>Heater commanded on</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to
Cir- cuit High Bank 1 Sen- sor 3			essauthorised by Volkswa	gen AG. Volkswa	gen AG does not gua	O3.6.22 Xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713
		purposes, in part or in whole, is not bern.	Heater commanded on  Heater commanded on  CAN active			- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CRUA)"
0 Am-	ture Sensor Short To Battery / Open Cir-	-50° C	• CAN active	• Multiple	• 2 DCY	Temperature Sensor - S G17 Refer to
						- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions Time	tion	Component Diagnostic Procedure
1 T Am- tu bient F	Settoundercial purposes, in part or in whole, is not be set or in whole, is not be set or in whole is solved in the set of the set o	IAT at engine start (depending on engine off time) < 24.75° C  • And • Diff NAT vs. AAT at engine start (depending on engine off time) > 24.75° C  • And • Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C	• Or	mormation in this of the party	nal Resist-



DTC / De- script ion	Strategy	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
2 Am-		• Ambient air temperature > 87° C	CAN active	• 6.0 s • Multiple	• 2 DCY	- Check the Outside Air Temperature Sensor - G17 Refer to  3.6.21 ut- side Air Temperature Sensor G17, Checking", page 711.  - Check the CAN-Bus terminal re- sistance. Refer to  C3.6.4 AN- Bus Terminal Resist- ance, Checking", page 676.
6	Manifold Pressure Sensor Ra- tionality Check Low	Difference manifold pressure - lower threshold model < 0.0 hPa     Model range 0.0 - 800.0 hPa	Time after engine start n.a.  Oracle de la company de la	• 450.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 /
sure	Manifold Pressure Sensor Ra- tionality Check High	Difference manifold pressure - lower threshold model > 0.0 hPa     Model range 650.0 - 1,080.0 hPa		Woolity With respect to the correctness of information in this		J338, Checking", page 726 .  - Check the Intake Manifold Sensor - GX9 Refer to  ∃ I3.6.15 ntake
man ce	Manifold Pressure	Diff. altitude sensor signal vs. manifold pressure signal at engine start > 60.0 hPa      Offset value manifold pressure for	Time after engine start < 25.0 s  Engine speed < 330 RPM  Driving condition range 1 (omsna):	tion in this of		Manifold Sensor GX9, Checking", page 698.
	Sensor Adaptation Value Mon- itoring	load calcula- tion in driving condition range 2.0 > 55.0 hPa	• Engine speed < 800 RPM			



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
ion	Безсприоп	Offset value manifold pressure for load calculation in driving condition range 2.0 < -60.0 hPa	<ul> <li>Desired mass flow 5.0 – 25.0 kg/h</li> <li>Delta adaptation value range 1.0 &lt; 0.10 kg/h</li> <li>For time 1.0 s</li> <li>Driving condition range 2 (opsra):</li> <li>Engine speed &gt; 1,400 RPM</li> <li>Manifold pres-</li> </ul>	Tillie		uure
	orcial purposes, in part or in Whole	Ello to all the total the	sure < 425.0 hPa  Delta adaptation value range 2.0 < 2.97 hPaolkswage For time 8.0 s  Driving condition range 3 (opua):  Desired mass flow > 40.0 kg/h  Manifold pressure > 550.0 hPa  Delta adaptation value range 3.0 < 2.97 hPa  For time 5.0 s  General:		arantee of acceptant liability	th respect to the correctnes



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
7 Mani fold	Manifold Pressure Sensor Short To	• Signal Voltage	bikswagen AG does not gu <sub>alfä</sub>	• 1.0 s • Continu- • Ous	• 2 DCY	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to
Pres- sure/ Baro met- ric Pres- sure Sen-				dali	with respect to the	T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.
Sor Cand biorenmoon					with respect to the correctness of information.	- Check the Intake Manifold Sensor - GX9 Refer to   3.6.15 ntake
	Olen			• 1.0 s	malion i.	Manifold Sensor GX9, Checking", page 698.
P010 8 Mani fold Ab- sol- ute	Manifold Pressure Sensor Short To Battery / Open Cir- cuit	• Signal voltage > 4.86 V	DA negsweath Activities of the second of the	Solitina-	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to
Pressure/Baro metric Pressure Sen-						T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.
sor Cir- cuit High						- Check the Intake Manifold Sensor - GX9 Refer to
						Manifold Sensor GX9, Checking", page 698



P011 Intake Air Tempera- Interperation take Air Temperature Ration take Air Temperature Ration take Air Temperature Bensor 1 Circuit Rang Rang e/Performan ce Bank 1  1 Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT at engine start (depending on engine off time) > 24.75° C  And Diff. AAT vs. ECT vs. ECT vs. ECT outlet <= 20° C  Minus  AAT @ start <= 2° C  Decy Ooks AG. Volkswagen Intake Manifold Sensor GX9. Checking in page 639.  AAT at engine off time > 20° C  Time after engine start 2.0 s  Solar-radiation case 2:  AAT @ condition:  Vehicle speed > 20 km/h  Solar radiation case 2:  IAT @ start <= 2° C  DCY  Once / D	DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
<ul> <li>Minus</li> <li>IAT @ condition:</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> </ul>	1 In- take Air Tem- pera- ture Sen- sor 1 Cir- cuit Rang e/ Per- for- man ce Bank	Tempera- ture Ration-	IAT at engine start (depending on engine off time) > 24.75° C  • And  • Diff. IAT vs. AAT at engine start (depending on engine off time) > 24.75° C  • And  • Diff. AAT vs. ECT at engine start (depending on engine off time) < 24.75° C	<ul> <li>Time after engine start 2.0 s</li> <li>Or</li> <li>Diff. ECT vs. ECT outlet &lt;= 20° C</li> <li>Time after engine start 2.0 s</li> <li>Solar radiation case 1:</li> <li>AAT @ start &lt;= 2° C</li> <li>Minus</li> <li>Vehicle speed &gt; 20 km/h</li> <li>For time &gt; 5.0 s</li> <li>Solar radiation case 2:</li> <li>IAT @ start &lt;= 2° C</li> <li>Minus</li> <li>IAT @ condition:</li> <li>Vehicle speed &gt; 20 km/h</li> </ul>			Jintake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9. Checking", page 698.  - Check the Engine Coolant Temperature Sensor G62 Refer to ⇒ E3.6.7 ngine Coolant Temperature Sensor G62. Checking", page 683.  - Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to Sensor on Radiator Outlet G83. Checking", checking ch	



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P011 2 In- take Air	Intake Air Tempera- ture Sensor Short To Ground	• IAT > 130° C	Gonditions  Jen AG does not guarantee orat	• 5.0 s • Multiple	• 2 DCY	- Check the Intake Manifold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9. Checking", page 698.  - Check the Engine Coolant Temperature Sensor G62 Refer to ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.  - Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to ⇒ E3.6.8 ngine Coolant Temperature Sensor on
	Elyndoo ; ILBUNDOON	Profected	DA negewesto V Valneyivqoo			Radiator Outlet G83, Checking", page 685.



DTC / De- script ion	_	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
1 2	Intake Air Tempera- ture Sensor Short To Battery / Open Cir- cuit	• IAT < -46° C  authorised by Volkswagen	AG. Volkswagen AG does no	• 5.0 s • Multiple	• 2 DCY	- Check the Intake Manifold Sensor - GX9 Refer to   3
High Bank 1	orcommercial purposes, in part orin whole	authorized by Volkswas	Secondary Parameters with Enable Conditions  AG. Volkswagen AG does not be a secondary Parameters with Enable Conditions		espect to the correctness of information in	- Check the Engine Coolant Temperature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683 .
	PRAILED OF FRANCE	TOO THOUNDOON AD DOO		ON MORUBLINGO JUDI	this of the second seco	<ul> <li>Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to</li> </ul>
		, ५०वंग्रञ्जू	.ĐA nagsway			E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685



DTC   Monitor / De- Strategy script   Description ion	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P011 Coolant Engine Coolant Temperature Sensor 1 Circuit Rang e/ Performan ce	Thres_01[f(EC     No change on signal 1.5 K	<ul> <li>ECT @ start n.a.</li> <li>ECT 50 – 75° C</li> <li>Cold start n.a.</li> <li>Temp 02</li> </ul>		• 2 DCY  G. Volkswagen AG	- Check the Engine Coolant Temperature Sensor G62 Refer to  E3.6.7 ngine Coolant Temperature Sensor G62. Checking". page 683 page 683 page 683 page 683 page 683 page 683. Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to  E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking". page 685 p



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
ion	Engine Coolant Tempera-		• Temp_01 olkswagen AG • ECT @ start n.a. • ECT 105 – 140° C • Cold start n.a. • Temp_02 • Substitute ECT > -45° C • Driving condition L: • Vehicle speed 0 - 20 km/h • Mass air flow 4.0 - 40.0 kg/h • Time required / > 10.0 s • Frequency 3.0 times	nice or acceptant liable	with respect to the correctness of information	dure
			Frequency once			

DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	in part or in whole, is not be mited.	Signal in range 75.0 – 105.0° C  And No change on signal n. a.  Sesaumoised by Volkswag  Sesaum	<ul> <li>Driving condition H:</li> <li>Vehicle speed n.a.</li> <li>Mass air flow n.a.</li> <li>Time required / n.a.</li> </ul>	• 2.0 s • Once / DCY	center that the correct to the corre	
	or commercial purporty	Standoo Ka Dalahi Oo Jalahi Oo Jalah	wagen AG.	Copyiding Volke	actness of information in this obuly by	

		can Tool - Edition (	JI.ZUZZ			G does not guarantee or acc	<del>%</del>
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	AN HADILITY WITH
P011 7 En- gine Cool- ant Tem- pera- ture Sen- sor 1 Cir- cuit Low	Engine Coolant Tempera- ture Sensor Short To Ground	• ECT > 140° C	Conditions of Commercial purposes, in part or in whole is not to the conditions of Commercial purposes, in part or in whole is not to the conditions of the	• 2.0 s • Multiple	• 2 DCY	on Radiator Outlet -G83	Quand liability with respect



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P011 8 En- gine Cool- ant Tem- pera- ture Sen- sor 1 Cir- cuit High	Coolant Tempera- ture Sensor Short To Battery /	• ECT < -40° C		• 2.0 s • Multiple	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor -G62 Refer to  ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.
riigii						- Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to ⇒
						E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685
		à	thorised by Volkswagen AG. V	olkswagen AG do	es not guarantee or	<ul> <li>Check the engine cool- ant thermo- stat. Refer to appropriate repair man- ual.</li> </ul>
1	Throttle Position Sensor 1 Rationality Check	• TPS1-TPS2 > 6.30% • And	• Engine speed > 480 RPM	0.3 s     Multiple	• 2 DCY	Check the Throttle Valve Control Module - GX3 / J338 Refer to
tion Sen- sor/ Switc h "A" Cir- cuit Rang e/ Per- for- man ce		• TPS1 - calc. value > 9.0%				T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726.
		Steamer of Colins	Protected by copyright; O			Elentro S.
			O'IUGINDO AG DEIN		Copyright by Valkewa	
			-melo1q	.ĐA <sub>NĐD</sub>	3. Diagno	osis and Testing 5



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						· Ph
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
tle/ Ped- al Posi- tion Sen- sor/ Switc h "A" Cir- cuit	Throttle Position Sensor 1 Out Of Range Low	• Signal voltage < 0.20 V	ate of commercial purposes, if that of the who	• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to   T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P012 3 Throt tle/ Ped- al Posi- tion Sen- sor/ Switc h "A" Cir- cuit High	Throttle Position Sensor 1 Out Of Range High	• Signal voltage > 4.81 V	Salving to State of Commercial purposes	• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
P013 0 O2 Sen- sor Cir- cuit Bank 1 Sen- sor 1	Sensors Front Out Of Range	O2S ceramic temp. < 640° C	Modeled exhaust temp > 300° C     Fuel cut off not active	• 15.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P013 1 O2 Sensor Circuit Low Voltage Bank 1 Sensor 1	Oxygen Sensors Front Sig- nal Range Check	Short to ground Virtual mass (VM) < 1.75 V Or Or Nernst voltage (UN) < 1.50 V  Or Adjustment voltage (IA) < 0.30 V  Adjustment voltage (IP) < 0.30 V	Volkswagen AG does not gu	• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
O2 Sensor	Sensors Front Sig- nal Range Check	• Virtual mass (VM) > 3.25 V	DA nagen AG.	• 5.0 s • Multiple	• 2 Pess of information in the	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.

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DTC   Monitor   Malfunction   teria and Threst   Script   Description   old Value		Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P013 Oxygen Sensors Front Response Rate Monitoring, Area Ratio Slow Response Bank 1 Sensor 1  Sensor 1  Sensors Front Response Rate Monitoring, Area Ratio Slow Response Bank 1 Sensor 1  Sensor 1  Sensor 1  Lower valuation R2L and L2R 0.25 [-] (CBUA)  And  Difference R2L area tio vs. L2F area ratio -0.40 - 0.4 [-]  Asymmetric Advance R2L and L2R 0.25 [-] (CBTA)  Lower valuation R2L and L2R 0.25 [-] (CBTA)  Lower valuation R2L and L2R 0.25 [-] (CBTA)  Lower valuation R2L and L2R 0.25 [-] (CBUA)  And  Difference R2L area tio vs. L2F area ratio -0.40 - 0.4 [-]  CBUA)  Lower valuation R2L area tio vs. L2F area ratio -0.40 - 0.4 [-]  CBUA)  Lower valuation R2L area tio vs. L2F area ratio -0.40 - 0.4 [-]  CBUA)  Lower valuation R2L area tio vs. L2F area ratio -0.40 - 0.4 [-]  CBUA)  Lower valuation R2L area tio vs. L2F area ratio -0.40 - 0.4 [-]  CBUA)  Lower valuation R2L area tio vs. L2F area ratio -0.40 - 0.4 [-]  CBUA)	operation temperature is reached > 720° C  O2S front - time since operation readiness > 40.0 s  Engine speed 1,160 – 2,720 RPM  Engine load 13.99 – 45.0%  Gradient of engine load <= 7.99%  Exhaust system lag time calculation 0.15 – 0.33 s  Gradient of exhaust system lag time calculation <= 0.0 s  ECT >= 10° C  Catalyst temperature >= 450° C  Lambda control set-point prior to diagnostic fuel steps A/F-ratio stoichiometric  Relative fuel amount from wall applied compensation and evap purge <= 0.1 [-]  Canister load < 15.0 [-]  Time since last measurement > 3.0 s  2nd lambda control loop not active	- d	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 7/16.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
5 O2 Sen-	Oxygen Sensors Heater Front Out	O2S ceramic temperature < 720° C And	<ul> <li>Diagnosis evap purge system not active</li> <li>Fuel cut off for any cylinders not active</li> <li>Open circuit pump current (IP) ready</li> <li>Only Flex fuel systems without ethanol sensor:</li> <li>Ethanol concentration adaptation not active</li> <li>Modeled exhaust gas temp. &gt; 550° C</li> <li>Heater control AG.</li> </ul>		• 2 DCY	- Check the Oxygen Sensor 1 Before Cata-
sor Heat er Cir- cuit Bank 1 Sen- sor 1	Oxygen Sensors Heater Front Ra- tionality Check (Sensor Heating	<ul> <li>Heater duty cycle &gt; 100.0%</li> <li>O2S ceramic temp &lt; 74.5° C</li> <li>And</li> <li>Time after O2S heater on 35.0 s</li> </ul>	<ul> <li>ECT at start &gt; -10° C</li> <li>Engine shutoff time &gt; 120.0 s</li> <li>During ECM keep alive time (key off) &lt; 500.0</li> </ul>	• 35.0 s • Multiple	does not guarantee or	O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10 Checking", page 716.
		i, indiction of commercial purposes, i	S S S S S S S S S S S S S S S S S S S	en AG.	DEWENIO V VOITIBILIDOS	ne correctness of information in this occurrence.



DTC / De- script ion Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P013   Oxygen   Sensors   Rear 2 - Point - LSF   O2S Signal   Check - Circuit Continuity   1   (Heater Sensor 2   Check)   Check   Check   Coupling   Sor 2   Check   Check	<ul> <li>Delta voltage one step at heater switching &gt; 2.0 V</li> <li>And</li> <li>Number of heater coupling &gt;= 6.0 times [-]</li> </ul>	• For time > 12.0 s (CBTA)			- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Checking", page 7.13 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)", page 680 .  Automobile of the Catalytic Converter G465. Checking (CBUA)", page 680 .



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
7 O2 Sen- sor Cir- cuit Low Volt- age	tinuity	Signal voltage < 0.06 V  For time > 3.0 s  And  Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3 measurements) < 0.01 V	ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time n.a. (CBTA)  For time > 22.0 s (CBUA)  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time n.a. (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)  For time > 18.0 s (CBTA)  For time > 18.0 s (CBUA)  Catalyst purge not active  Catalyst purge not active			verter G465, Checking (CBUA)*, page 680
			S. WOUNDO WOUNDOON AND WOOD YOU	Protogo	- NA nagswey	ON MATARINGO JABATA ON JAB



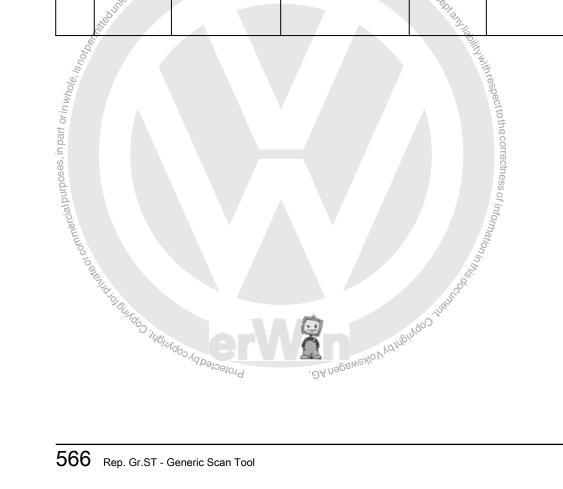
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
8 O2 Sen- sor Cir- cuit High Volt-	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Out Of Range High (Short To Battery Plus)	<ul> <li>Signal voltage &gt; 1.08 V</li> <li>For time &gt; 5.0 s</li> </ul>	ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s (CBTA)  For time > 22.0 s (CBUA)  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)  Or  Heater power >= 24.0%  For time > 8.8 s (CBUA)  General:  Dew point exceeded  Lambda set valuation	• 5.0 s • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.  - Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.  AAG does not guarante  Oraccontential distributions  Checking (CBUA)", page 680.
564	Rep. Gr.ST - G	Seneric Scan Tool	me volumercial purposes, in part or in mart or in mart or in mark or in mart or in mark	Till parting the parting of the part	Ploid	alytic Converter G465, Checking (CBUA)", page 680.  In AG does not guarante or acceptantiability with respect to the correctness of information in the correctness of informatio



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
9 O2 Sen- sor Cir- cuit Slow Re- spon se Bank	Off Off	<sub>ced</sub> 0.6 s	<ul> <li>Rich voltage (enable) &gt;= 548.0</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> <li>Or</li> <li>Trigger for step change: delta transient time &gt; 0.3 s</li> </ul>	• 4.5 s • Multiple  Antegoraconadoralidadorali	• 1 DCY	<ul> <li>Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .</li> <li>Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .</li> </ul>



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P013 A O2 Sen- sor Slow Re- spon se - Rich to Lean Bank 1 Sen- sor 2	O2 Sensor Slow Re- sponse - Rich to Lean Bank 1 Sensor 2	<ul> <li>EWMA filtered max differential transient time at fuel cutoff &gt;= 0.8 s</li> <li>And</li> <li>Number of checks &gt;= 1.0 [-]</li> </ul>	<ul> <li>Time of fuel cut-off &lt;= 90.0 s</li> <li>Time after last fuel cutoff &gt;= 5.0 s</li> <li>Rear O2S ready</li> <li>Exhaust temp at sensor deviation between actual and expected lambda signal &lt; 8 after time since fuel cutoff at first cylinder &gt;= 2.0 s</li> </ul>	• 10.0 s	• 1 DCY	- For CBTA: Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.
	ijte dune s authorise	JoyVolkswagen AG. Vol	<ul> <li>Exhaust mass flow &gt;= 12.0 kg/h</li> <li>Exhaust mass flow dynamic within range -500.0 - 500.0 kg/h</li> <li>Sensor voltage at start of measurement &gt; 0.45 V</li> <li>Target voltage end of measurement &lt;= 0.15 V</li> </ul>	ee or acceptany line		- For CBUA: Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680





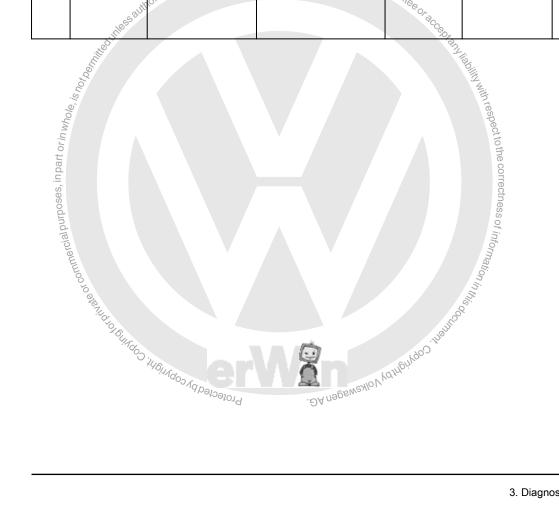
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
0 O2	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Signal Line Open Circuit)	Signal voltage 0.40 – 0.60 V  For time > 3.0 s  Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) >= 2.80 V	ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s (CBTA)  For time > 22.0 s (CBUA)  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s (CBTA)  For time > 8.8 s (CBUA)  Or  Heater power >= 24.0%  For time > 18.0 s (CBTA)		• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Checking". page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (GBUA)". page 680.
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DTC   Monitor   Strategy   Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Ground Line Open Circuit)	670° C	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready for operation</li> <li>For time &gt; 12.0 s (CBTA)</li> <li>For time &gt; 22.0 s (CBUA)</li> <li>Sensor sufficient heated up if exhaust temperature &gt;= 1,263° C</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 18.0 s (CBTA)</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>Or</li> <li>Heater power &gt;= 24.0%</li> <li>For time &gt; 8.8 s (CBUA)</li> <li>General:</li> <li>Dew point exceeded</li> <li>Valid Ri-measurements &gt; 10.0 times [-]</li> </ul>	• 50.0 s • Multiple	tswagen AG does no	t guarantee or acceptant liability
568 Rep. Gr.ST -	Generic Scan Tool	THE TO TO THE THE TO THE	Protected	JA nagen AG.	DA FOLIANOO THOMAS TO THE THOMAS THE THE THOMAS THE THOMAS THE THE THOMAS THE THOMAS THE THOMAS THE THOMAS THE



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
1 O2 Sen- sor	Point - LSF Out Of Range	Heater resistance 1,200.0  32,400.0 Ω (CBTA)  Heater resistance 880.0 – 30,400.0 Ω (CBUA)  (CBUA)	Modeled exhaust gas temp. 200 – 680° C  Engine shut-off-time > 120.0 s  (During ECM keep alive-time after ignition off) < 500.0 s (CBTA)  (During ECM keep alive-time after ignition off) < 1,200.0 s (CBUA)  Number of checks 10.0 [-]  Fuel cut off not active  Heater commanded on	• Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 .  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .





P014 Oxygen 2 Sensors O2 Rear 2 - Sen- sor O2S Signal Cir- cuit Circuit Con- Bank 1 (Heater Sen- Son Coupling Sor 3 Check)	<ul> <li>Delta voltage one step at heater switching &gt; 2.0 V</li> <li>And</li> <li>Number of heater coupling &gt;= 6.0 times [-]</li> </ul>	<ul> <li>Case 1: sensor ready for operation</li> <li>Sensor voltage &lt;= 0.40 V</li> <li>Or</li> <li>Sensor voltage 0.50 – 1.08 V</li> <li>Case 2: sensor theoretical ready</li> </ul>	• 60.0 s • Multiple	• 2 DCY	<ul> <li>Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer</li> </ul>
	£	for operation  For time > 12.0 s  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s  Or  Heater power >= 24.0%  For time > 18.0 s  General:  Dew point exceeded  For time > 10.0 s  Heater not active	gen AG. Volkswa	gen AG does not gu	to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking",
	orcommercial purposes, in part or in whole, is not be	For time > 0.0 s	Rold	• DA nagawaylo V ko	ability with respect to the first of the fir



P014   Oxygen   Sensors   Sensor voltage   Check the Center Oxygen Sensor voltage   Senso
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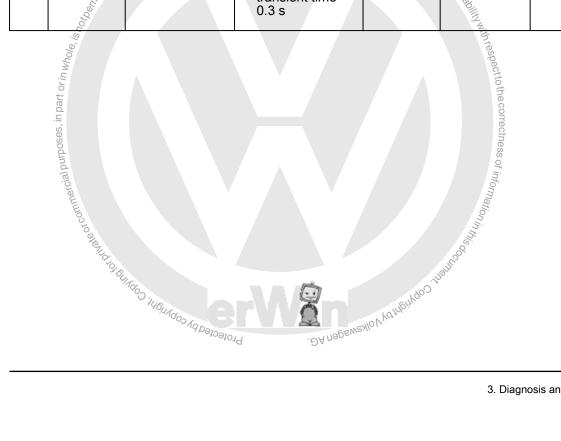


DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
4 O2 Sen- sor Cir- cuit High Volt- age Bank 1 Sen- sor 3	·	Signal voltage > 1.08 V  For time > 5.0 s  Signal voltage > 1.08 V  For time > 5.0 s	ready for operation  Sensor voltage <= 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s  Sensor sufficient	• 5.0 s • Multiple	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)", page 680 Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7. Checking", page 713.
572		Generic Scan Tool	Heater power >= 24.0% For time > 18.0 s Or Heater power >= 24.0% For time > 18.0 s General: Dew point exceeded Lambda set value > 0,995 [-]	.ĐAnegs	WEANO V VERTINGOO IN	$_{ m ispect}$ to the correctness of $inform_{aiio}$ $n_{inthis}$ $q_{out}$





5 Sensors   tered transi-   able >= 548.0   Center Ox	DTC   Monitor   Strategy   Description	gy teria and Thresh-	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
O2 Sen- ry LSF) Sor- Sor Cir- Cir- Cirt Time At Slow Respon se Bank 1 Sen- sor 3  Rear (Bina- ry LSF) Check Of Transient Time At Slow Respon se Bank 1 Sen- sor 3  Number of checks (initial phase) >= 4.0 [-]  Number of checks (step function) >= 3.0 [-]  Number of checks (step function) >= 3.0 [-]  Multiple  Lean voltage n.a.  O2S rear ready Rear O2 - sensor signal oscillating monitoring ready  EVAP purge valve diagnosis ready  Puel cut off ac- tive  Front O2 - sen- sor lambda sig- nal > 4.0 [-]  Modeled exhaust gas temp. > 480° C  Slope of exhaust mass < 50.0 kg/h  Rear O2 - sensor Acinternal resist- ance <=  Sensor for Bank 1 C. Catalytic Converter G465 Re to Catalytic Converter G4	5 Sensors O2 Sensor (Binary LSF) sor Check Of Transient Time At Fuel Cut Off Spon se Bank 1 Sensors 7 Check Of Transient Time At Fuel Cut Off Spon se Bank 3 Sensors 3	tered transient time at fuel cut off > 1.5 s  In voltage range 201.0 – 401.0 mV  Number of checks (initial phase) >= 4.0 [-]  Number of checks (step function) >= 3.0 [-]	<ul> <li>able &gt;= 548.0 mV</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2 - sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> </ul>	• Multiple		Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680  - Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer





P014 6 Sensors O2 Sensors O2 Sensors or Circuit Check - Circuit Continuity Centro Cuit)  No Ac-Circuit Contect Bank 1 Sensor 3 Sensor 3  Sensor 3  Sensor 3  Signal voltage on the proper of Sensor volts of S	DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	6 O2 Sensor Circuit No Activity Detected Bank 1 Sensor	Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Con- tinuity (Sensor Signal Line Open Cir- cuit)	<ul> <li>0.40 - 0.60 V</li> <li>For time &gt; 3.0 s</li> <li>And</li> <li>Difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3.0 measurements) &gt;= 2.80 V</li> </ul>	ready for operation  Sensor voltage - 0.40 V  Or  Sensor voltage 0.50 – 1.08 V  Case 2: sensor theoretical ready for operation  For time > 12.0 s  Sensor sufficient heated up if exhaust temperature >= 1,263° C  For time > 18.0 s  Or  Heater power >= 24.0%  For time > 18.0 s	AG. Volkswager Multiple	AG does not guarant	Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to C3 6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA), page 680  - Check the Oxygen Sensor 1 After Catalytic Converter GX7 Refer to C3.6.22 xygen Sensor 1 After Catalytic Converter GX7.



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DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
	Oxygen Sensors Rear 2 - Point - LSF O2S Signal Check - Circuit Continuity (Sensor Ground Line Open Circuit)	whole, is not by	Case 1: sensor ready for operation Sensor voltage <= 0.40 V Or Sensor voltage 0.50 − 1.08 V Case 2: sensor theoretical ready for operation For time > 12.0 s Sensor sufficient heated up if exhaust temperature >= 1,263° C For time > 18.0 s Or Heater power ✓= 24.0% For time > 18.0 s General: Dew point exceeded Valid Ri-measurements > 10.0 times [-]	• 50.0 s • Multiple	agen AG does not gu	arantee of acceptant liability with the contract of the liability with the liability with the contract of the liability with the liability with the contract of the liability with the liabilit	Dependent of the control of the cont
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DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
7 O2 Sen- sor Heat er Cir- cuit Bank 1 Sen- sor 3	Sensors Heater Rear 2 - Point - LSF Out Of Range	Heater resistance 1,200.0     – 32,400.0 Ω	Modeled exhaust gas temp. 200 – 680° C     Engine shut-off-time > 120.0 s     (During ECM keep alive-time after ignition off) < 500.0 s     Number of checks 10.0 [-]     Fuel cut off not active     Heater commanded on	• Multiple	• 2 DCY	- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680 .  - Check the Oxygen Sensor 1 Af- ter Catalytic Converter - GX7 Refer
10le, is not bernitt	aurhorist surhorist		Nagen AG does not guarantes	of accept and liability with response		to  ⇒ O3.6.22 xy- gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.
9 In- cor- rect Fuel Com	EGAS Module Function Monitoring: Injection	Comparison with fuel quantity incor- rect	speed > 1,200 RPM	Continuous	2 Do	Check for contaminated/aged fuel or possible high concentration of alcohol in fuel
position	ECM: EGAS	<ul> <li>Internal check failed</li> <li>Correction factor incorrect</li> </ul>	DA NORMANAGEN AG.	"Mormation in this occurrence of the state o	The first	(above 15%). Poor quality fuel will also increase consumption. Replace with fresh fuel if believed to be contaminated. Refer to appropriate repair manual.
	Control	-				- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ≥



DTC / De- script ion	Monitor Strategy Description	Malfunction Criteria and Threshold Value	Secondary Parameters with Enable AG. V Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	purposes, in part or in whole, is not be milling to the man of the			d'antee O	nam liability with respect to the correctness of its	O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716  If fuel quality is adequate,
	purposes, inpart or				othe correctness of p	replace the Engine/ Motor Con- trol Module. Refer to ap- propriate re- pair manual.
1. 020	Injection Valves Open Circuit	4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• Continuous	Dirnation in this Co.	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
2 Cyl-	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	Injection valve switched off off off off off off off off off of	• Continu- ous	• 2 DCY	- Check the Fuel Injectors. Refer to F3.6.13 uel Injectors. Checking", page 694.
3	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
4 Cyl-	Injection Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors. Checking", page 694.

DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P020 5 Cyl- inder 5 In- jec- tor "A" Cir- cuit	Valves Open Cir- cuit	• Signal voltage 4.50 – 5.50 V	switched off  • Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
P022 1 Throt tle/ Ped- al Position Sen- sor/ Switc h "B" Cir- cuit Rang e/ Per- for- man ce	Throttle Position Sensor 2 Rationality Check	<ul> <li>TPS1 - TPS2 &gt; 6.30%</li> <li>And</li> <li>Actual TPS2 - calc. value &gt; actual TPS1 - calc. value</li> <li>or</li> <li>TPS2 - calc. value &gt; 9.0%</li> </ul>	• Sengine speed > 480 RPM	• 0.3 s • Multiple	- 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking page 7.26.
P022 2 Throt tle/ Ped- al Position Sen- sor/ Switc h "B" Cir- cuit Low	sition Sen- sor 2 Out Of Range Low	Signal voltage < 0.20 V		• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.
P022 3 Throt tle/ Ped- al Posi- tion Sen- sor/ Switc h "B" Cir- cuit High	sition Sen-	Signal voltage > 4.81 V		• 0.1 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .



	DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	1	Injection Valves Short To Ground	• Signal voltage < 3.0 V	Injection valve switched off  Engine speed > 80 RPM  AG does not guarantes of accept.  AG does not guarantes of accept.	O.5 s Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694.
on commercial purposes, in part or in whole, is not beyon.	P026 2 Cyl- inder 1 In- jec- tor "A" Cir- cuit High	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694 .
or commercial purpo	P026 4 Cyl- inder 2 In- jec- tor "A"- Cut Low	Injection Valves Short To Ground	• Signal voltage < 3.0 V	switched off	• Continu- ous	• 2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.
	P026 5 Cyl- inder 2 In- jec- tor "A" Cir- cuit High	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 Å	Injection valve switched on  Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
	P026 7 Cyl- inder 3 In- jec- tor "A" Cir- cuit Low	Injection Valves Short To Ground	• Signal voltage < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694 .



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
8 Cyl-	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	<ul> <li>Injection valve switched on</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694.
P027 0 Cyl- inder 4 In- jec- tor "A" Cir- cuit Low	Injection Valves Short To Ground	• Signal voltage < 3.0 V	<ul> <li>Injection valve switched off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P027 1 Cyl- inder 4 In- jec- tor "A" Cir- cuit High	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	• Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694.
P027 3 Cyl- inder 5 In- jec- tor "A" Cir- cuit Low	Injection Valves Short To Ground	• Signal voltage < 3.0 V		• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to \$\frac{1}{5}\$ F3.6.13 uel Injectors. Checking page 694 .
P027 4 Cyl- inder 5 In- jec- tor "A" Cir- cuit High	Injection Valves Short To Battery Plus	• Signal current 2.20 – 4.0 A	switched on • Engine speed > 80 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Fuel Injectors. Refer to F3.6.13 uel Injectors, Checking", page 694
0 Ran- dom/ Mul-	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	Emission threshold mis- fire rate (MR) > 2.0%	Active after engine start idle – 150 RPM + 1 camshaft rev	• 1,000 rev • Multiple	• 2 DCA	intako eve



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
inder Mis- fire De- tec- ted		numposes, in part or in second	Engine speed range 500 – 6,400 RPM  Engine torque >= 0.0 Nm  IAT > - 48° C  ECT @ start > - 48° C  Fuel cutoff not active start  Rough road not detected		• Immediately  New agen AG does of the state	test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.  - Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in	Dility wild:



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						With Power Output Stage, Checking", page 696
1 Cyl-inder 1 Mis- fire De- tec- ted		• Emission threshold misfire rate (MR) > 2.0%		• 1,000 rev • Multiple  Suarantee or accept	• 2 DCY	<ul> <li>Check the intake system visually for leaks (false air).</li> <li>Check the spark plugs visually for signs of fouling.</li> <li>Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.</li> <li>Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in</li></ul>



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
D030	Misfire	<ul> <li>Catalyst damage misfire rate (MR) &gt; 3.4 - 20.3% (CBTA)</li> <li>Catalyst damage misfire rate (MR) &gt; 3.4 - 20.0% (CBUA)</li> <li>Emission</li> </ul>	Active after en-	<ul> <li>200 rev</li> <li>Multiple</li> </ul>	• Immediately	Checking", page 694.  - Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696.
2 Cyl-	Crankshaft Speed Fluctuation (Single Or Multiple)	threshold misfire rate (MR) > 2.0%	gine start idle 150 RPM + 1 camshaft rev  • Engine speed range 500 – 6,400 RPM  Engine torque >=		DA nagawaylo	- Check the intake system visually for leaks (false air).  - Check the spark plugs visually for signs of fouling.  - Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern Refer to appropriate repair manual for low compression readings or for carbon buildup removal.  - Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage misfire rate (MR) > 3.4 - 20.3% (CBTA)		<ul><li>200 rev</li><li>Multiple</li></ul>	Immedi- ately	C3.1 heck", page 14 and/or to ap- propriate re- pair manual.
		• Catalyst damage misfire rate (MR) > 3 4 - 20 0%				- Check the Fuel Injectors. Refer to
		(CBUA)	<sub>ge</sub> n AG. Volkswagen AG <sub>doe</sub>	snot gua		F3.6.13 uel Injectors, Checking", page 694
	1,001 1,001	less autrorise o		-arante <sub>e Ore</sub>	CCRD RATULIER HILL	Check the Ignition Coils with Power Output Stage. Refer to
	inpart orin whole, is no		gen AG. Volkswagen AG doe		Ccotan liability with respect to the correct	⇒ I3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696
Cyl- inder 3	Speed Fluctuation (Single Or	Emission threshold mis- fire rate (MR) > 2.0%	<ul> <li>Active after engine start idle –         150 RPM + 1         camshaft rev</li> <li>Engine speed</li> </ul>	• 1,000 rev • Multiple	• 2 DCY	Check the intake system visually for leaks (false air).
Mis- fire De- tec- ted	Multiple)	9,	range 500 -		• 2 DCY	<ul> <li>Check the spark plugs visually for signs of foul- ing.</li> </ul>
		THON THOUNGOON APPINE	6,400 RPM  • Engine torque >= 0.0 Nm  • IAT > - 48° C  • ECT @ start > - 48° C  • Fuel cutoff not active  • Rough road not detected	ISMOV YOTH BINGO		- Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		<ul> <li>Catalyst damage misfire rate (MR) &gt; 3.4 - 20.3% (CBTA)</li> <li>Catalyst damage misfire rate (MR) &gt; 3.4 - 20.0% (CBUA)</li> </ul>		200 rev     Multiple	Immediately	buildup removal.  - Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in   C3.1 heck", page 14 and/or to appropriate repair manual.
		dunias authorised by Volkey	<sub>ragen</sub> AG. Volkswagen AG d	Pes not guarantee o	Paccept and likely	- Check the Fuel Injectors. Refer to  ⇒ F3.6.13 uel Injectors, Checking", page 694  - Check the
	sial purposes, in part or in whole, is hot <sub>b</sub>		<sub>lagen</sub> AG. Volkswagen AG <sub>d</sub>		ity with respect to the correctness of inf	Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696.
4 Cyl- inder 4 Mis- fire	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	Emission threshold mis- fire rate (MR)     > 2.0%	<ul> <li>Active after engine start idle – 150 RPM + 1 camshaft rev</li> <li>Engine speed range 500 – 6,400 RPM</li> <li>Engine torque &gt;= 0.0 Nm</li> <li>ECT @ start &gt; - 48° C</li> <li>Eugl cutoff not</li> </ul>	• 1,000 rev • Multiple	• 2 DCY Tration in this Co.	- Check the intake system visually for leaks (false air).  - Check the
De- tec- ted		OS HIBITADOS APPOR	Engine torque >= 0.0 Nm	SWEMO V VOTAGINY	5 <sup>.2</sup>	spark plugs visually for signs of foul- ing.  - Check for an
			<ul> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not detected</li> </ul>			engine me- chanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal com-



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		<ul> <li>Catalyst damage misfire rate (MR) &gt; 3.4 - 20.3% (CBTA)</li> <li>Catalyst damage misfire rate (MR) &gt; 3.4 - 20.0% (CBUA)</li> </ul>	uthorised by Volkswagen AG. V	<ul> <li>200 rev</li> <li>Multiple</li> </ul>	• Immediately	pression reading and may contrib- ute to this concern. Re- fer to appro- priate repair manual for low com- pression readings or for carbon buildup re- moval.
		cial purposes, in part or in whole, is not beinited the	By ithorised by Volkswagen AG.			Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in C3.1 heck", page 14 and/or to appropriate repair manual.  Check the
		Jammos to arente of commet				Fuel Injectors, Refer to F3:6.13 uel Injectors, Checking", page 694.
			Protected by copyright, Copyright,	.ĐA nag	<sub>ЕМ</sub> ЭМО МЕНТО ОКЭМЭ	Ignition Coils with Power Output Stage. Refer to  3.6.14 gni-
						tion Coils With Power Output Stage, Checking", page 696.
5 Cyl-	Misfire Crankshaft Speed Fluctuation (Single Or Multiple)	Emission threshold mis- fire rate (MR) > 2.0%	<ul> <li>Active after engine start idle –         150 RPM + 1         camshaft rev</li> <li>Engine speed</li> </ul>	• 1,000 rev • Multiple	• 2 DCY	Check the intake system visually for leaks (false air).
fire De- tec- ted	wuupie <i>)</i>		range 500 – 6,400 RPM • Engine torque >= 0.0 Nm			Check the spark plugs visually for signs of fouling.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Catalyst damage misfire rate (MR) > 3.4 - 20.3% (CBTA)  Catalyst damage misfire rate (MR) > 3.4 - 20.0% (CBUA)	<ul> <li>IAT &gt; - 48° C</li> <li>ECT @ start &gt; - 48° C</li> <li>Fuel cutoff not active</li> <li>Rough road not detected</li> </ul>	• 200 rev • Multiple	Immediately	- Check for an engine mechanical fault with a cylinder compression test. Carbon buildup may cause a higher than normal compression reading and may contribute to this concern. Refer to appropriate repair manual for low compression readings or for carbon buildup removal.
			on the state of th	<sub>KSW</sub> agen AG. Vo	kswagen AG does n	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in
			S. Is not be amily			page 14 and/or to appropriate repair manual.
		in part or in wh				- Check the Fuel Injectors. Refer to  F3.6.13 uel Injectors, Checking", page 694  - Check the Ignition Coils with Power
		sial purposes,				Injectors, Checking", page 694.
			muoo to age math to			Ignition Coils with Power Output Stage. Refer to
			E S S S S S S S S S S S S S S S S S S S	Protected	Kenagen AG.	i3.6.14 gni- tion Coils With Power Output Stage, Checking", page 696.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P032 1 Ignition/ Distributor Engine Spee d Input Circuit Rang e/ Performan ce	RPM Sen- sor Ration- ality Check	Counted teeth vs. reference incorrect     Or     Monitoring reference gap failure	Secondary Parameters with Enable Conditions  Conditions  Light Manual C	• 2.0 s • Multiple  sed by Volkswage	• 2 DCY	- Check the Engine Speed Sen- Sor -G28 Refer to  E3.6.9 ngine Speed Sen- sor G28, Checking", page 686.  - Check the Camshaft Position Sensor - G40 Refer to  C3.6.3 am- shaft Position Sensor G40, Checking", page 674.	*CCEOTED IIIO IIII
P032 2 Ignition/ Distributor Engine Spee d Input Circuit No Signal	RPM Sensor Signal Activity Check	<ul> <li>Camshaft signals &gt; 5.0 [-]</li> <li>And</li> <li>Engine speed no signal</li> </ul>	ammoo to agent doo it	• 2.0 s • Multiple	• 2 DCY	- Check the Engine Speed Sensor -G28-Refer to  ===================================	THINK OR OR THE



	wewagen AG. Volkswagen AG. Google							
DTC / De- script ion	•	Malfunction Cri- teria and Thresh- old Value	Secondary Parame- ters with Enable Conditions	Monitoring Length	e or acce	Component Diagnostic Procedure		
4	Knock Control Internal Hardware Check Chec	Signal fault counter (combustion) > 30.0 [-]  Or Signal fault counter (measuring window) > 2.0 [-]	• Engine speed > 2,000 RPM	• 0.5 s • Continuous	• 2 DCY liability with respect to the second months of the second matter than the second months of the second mont	700 .  Check the Knock Sen- sor 2 -G66		
7	Knock Sensor Short To Ground Port A Knock Sensor Short To Ground Port B Knock Sen-	• Lower thresh-	• Engine speed > 1,000 RPM	0.5 s     Continuous     obe Meylor Maryon     0.5 s	• 2,0CY	- Check the Knock Sen- sor 1 -G61 Refer to  ⇒ K3.6.16 noc k Sensor 1 G61, Check- ing", page 700.		
Sen-	sor Signal Range Check	old < 1.4 – 5.6 V	2,000 RPM  • ECT > 41° C  • Engine load > 30.0 – 33.8%	• Multiple		- Check the Knock Sensor 2 -G66. Refer to  ⇒ K3.6.17 nock Sensor 2 G66, Checking", page 702.		
P032 8 Knoc k/ Com bus- tion Vi- bra-	Knock Sensor Short To Battery Plus Port A Knock Sensor Short To Battery Plus Port B	Upper threshold > 1.0 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sensor 1 -G61 Refer to		
tion Sensor 1 Circuit High Bank 1 or Single Sensor	Knock Sen- sor Signal Range Check	• Upper threshold > 23.0 – 92.0 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	<ul><li>0.5 s</li><li>Multiple</li></ul>		Too .  - Check the Knock Sensor 2 -G66 Refer to  ⇒ K3.6.17 noc k Sensor 2 G66, Checking", page 702 .		



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P033 2 Knoc k/ Com bus- tion Vi- bra-	sor Short	• Lower threshold < - 0.70 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to
tion Sen- sor 2 Cir- cuit Low Bank 2	Knock Sen- sor Signal Range Check	• Lower threshold < 1.4 – 5.6 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	• 0.5 s • Multiple		702 .
P033 3 Knoc k/ Com bus- tion Vi- bra-	sor Short	Upper threshold > 1.0 V	• Engine speed > 1,000 RPM	0.5 s     Continuous	• 2 DCY	- Check the Knock Sen- sor 2 -G66 Refer to
tion Sen- sor 2 Cir- cuit High Bank 2	Knock Sen- sor Signal Range Check	• Upper thresh- old > 23.0 – 92.0 V	<ul> <li>Engine speed &gt; 2,000 RPM</li> <li>ECT &gt; 41° C</li> <li>Engine load &gt; 30.0 - 33.8%</li> </ul>	• 0.5 s • Multiple		702 .
1	Phase Sensor 1 Rationality Check	Signal pattern incorrect	Tre or commercial purposes, in part or in whole, is not only the state of the state	• 0.5 s age	r•AG <b>2</b> / <b>D'CY</b> agen∠	Check the Camshaft Position Sensor - G40 Refer to  C3.6.3 amshaft Position Sensor G40, Checking", page 674.  Check the Engine Speed Sensor -G28 Refer to  E3.6.9 ngine Speed Sensor G28, Checking", page 686.

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DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
2 Cam shaft Posi- tion Sen- sor "A" Cir- cuit Low Bank 1 or	Phase Sensor 1 Rationality Check	permanently low  Crankshaft signal 8.0 [-]	olkswagen AG. Volkswagen	0.5 s     Continuous  AG does not gual	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to   ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page 674 .
Sin- gle Sen- sor	t orin whole, is p.	ille de la	olkswagen AG. Volkswagen		SOF RCC RITER MINISTER MANAGEMENT	- Check the Engine Speed Sensor -G28 Refer to    E3.6.9 ngine Speed Sensor G28, Checking", page 686.
P034 3 Cam shaft Posi- tion Sen- sor "A" Cir- cuit High Bank 1 or	sor 1 Rationality Check	permanently high  Crankshaft signal 8.0 [-]		Continuous	and the state of t	Camshaft Position Sensor -
Sin- gle Sen- sor		So of Build of Buildon in Birdon	Protected by	A nagen Ay	ugindoo **	- Check the Engine Speed Sensor -G28 Refer to
P035 1 Ignition Coil "A" Primary Control Circuit/ Ope	Ignition Coils Open Circuit	<ul> <li>Signal current         -0.25 – -2.0         mA</li> <li>Or</li> <li>Internal check         failed</li> </ul>	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P035 2 Ignition Coil "B" Primary Control Circuit/ Ope n	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
P035 3 Ignition Coil "C" Primary Control Circuit/ Ope n	Ignition Coils Open Circuit	<ul> <li>Signal current         -0.25 – -2.0         mA</li> <li>Or</li> <li>Internal check         failed</li> </ul>	• Engine speed > 680 RPM	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P035 4 Ignition Coil "D" Primary Control Circuit/ Ope n	Ignition Coils Open Circuit	Signal current -0.252.0 mA  Or or hiternal check failed	• Engine speed > 680 RPM  G. Volkswagen AG does not	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P035 5 Igni- Coilding "E" Pri- Mary Con- trol Cir- cuit/ Ope n	Ignition Coils Open Circuit	<ul> <li>Signal current -0.25 – -2.0 mA</li> <li>Or</li> <li>Internal check failed</li> </ul>	• Engine speed > 680 RPM	• 0.5 s • Continuous	$\mathbf{C}_{\mathrm{ct}}$ to the correctness of $\inf_{\sigma} f_{\sigma} f_{$	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
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DTC / De- script ion	Monitor Strategy Description	Malfunction Criteria and Threshold Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P041 0 AIR Sys- tem "A"	Air System Check After SAI  SAI  Salah Dan Sand Check After SAI  Salah S	Deviation SAI pressure > 50.0 hPa  TO ON THE MARKET OF THE PARKET O	<ul> <li>Mass airflow 7.0 – 120.0 kg/h</li> <li>Delta engine load -10.0 – 10.0%/rev</li> <li>ECT 5 – 108° C</li> <li>IAT 5 – 100° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>SAI pressure sensor ready</li> </ul>	• 6.0 s • Once / DCY	• 2 DC  • 2 DC  • 2 DC  • 2 DC  • 2 DC	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719.
P041 3 AIR System Switc hing Valv e "A" Circuit Ope	Open Cir- cuit	• Signal voltage 9.25 – 11.25 V	manded off • Engine speed > 80 RPM	Continuous	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to   ⇒ S3.6.26 eco ndary Air Injection Solenoid Valve N112, Checking", page 723 .
P041 4 AIR System Switc hing Valv e "A" Circuit Short ed	Air Valve Short To Ground	• Signal voltage < 6.0 V	<ul> <li>Air valve commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	Continuous	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to   ⇒ S3.6.26 eco ndary Air Injection Solenoid Valve N112,

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DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Air Valve Short To Battery Plus	• Signal current	Air valve commanded on  Engine speed > 80 RPM	Professional Control of the Control		Checking", page 723
8 AIR Sys- tem	Air Pump Relay Open Circuit	• Signal Voltage 4.50 – 5.50 V	manded off • Engine speed > 80 RPM	• Continuous illumin respective and a continuous and a co	othe correctness	- Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .
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			Sep. Sep. Sep. Sep. Sep. Sep. Sep. Sep.			* <sup>2</sup> C <sub>C</sub>
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Cat- Malyst O Sys- patem O Effi- B	Catalyst System Measure Of DSC Com- Dared To DSC Of Borderline Catalyst	Measured OSC / OSC of borderline catalyst measured OSC (HC and NOx-correlated) < 1.0 [-] sodand repared.	Time after engine start > 343.0 s  Or  Time after dew point > 343.0 s  Delta exhaust mass flow < 25.0 kg/h  Exhaust gas mass flow, lower range 25.0 – 130.0 kg/h  (CBUA)  Exhaust gas mass flow, upper range n.a.  Modeled exhaust gas temp. dynamic < 50 K  Modeled exhaust gas temp. in catalyst system, lower range 500 – 860° C (CBUA)  Modeled exhaust gas temp. in catalyst system, lower range 560 – 860° C (CBTA)  Modeled exhaust gas temp. in catalyst system, lower range 560 – 860° C (CBTA)  Modeled exhaust gas temp. in catalyst system, upper range n.a.  Minimum modeled exhaust gas temp. in catalyst system > 400° C  For time > 120.0 s  Filtered minimum modeled exhaust gas temp. in catalyst system > 400° C  For time > 120.0 s  Filtered minimum modeled exhaust gas temp. in catalyst system > 400° C  For time > 120.0 s  Filtered minimum modeled exhaust gas temp. in catalyst system > 400° C  For time > 120.0 s  Filtered minimum modeled exhaust gas temp. in catalyst system > 400° C  For time > 120.0 s  Filtered minimum modeled exhaust gas temp. in catalyst system > 450° C  Engine load 12.8 – 65.3% (CBUA)  Engine load 12.8 – 60.0% (CBTA)	• 40.0 s (CBUA) • 30.0 s (CBTA) • Once / DCY	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter GX7. Refer to  - Check the Center Oxygen Sensor 1 After Catalytic Converter GX7. Checking". page 713.  - Check the Center Oxygen Sensor for Bank 1 Catalytic Converter GX65. Refer to  - C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA)". page 680.  - Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  - Check the Oxygen Sensor 1 Before Catalytic Converter GX10. Checking". page 716.  - Check the Three Way Catalytic Converter (TWC). Refer to  - Check the Three Way Catalytic Converter (TWC). Refer to  - Check the Three Way Catalytic Converter (TWC). Refer to  - Check the Three Way Catalytic Converter (TWC). Refer to  - Check the Three Way Catalytic Converter (TWC). Refer to  - Check the Three Way Catalytic Converter (TWC). Refer to

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DTC / De- script	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
ion			edui.			DIA
		, %	• Evap purge load- ing not high			Jability
		whole, is no	• Engine speed 1,200 – 3,320 RPM			
		ommercial purposes, in part or in whole, is n	Range between lambda set value and lambda val- ue < 0.02 [-]			AQIII GIIAGO TIRBUTO O GARA
		esodund	Out of lambda range < 2.0 s			
		mercial	Lambda control closed loop			
		Ö	Lambda control not at min or max limit			"In this g
			Number of checks 3.0 [-]			O. Manus
			O2S front ready	N	9	Guldo
			O2S rear ready, page       SAS not active.		1011	Kajing.
			OZOTCAI TCAUJ <sub>I/OQI</sub>	oetorq	.DA NAGENZAIO.	
			SAS not active	7	J 4	
			No misfire			
			O2S front re- sponse monitor- ing in current driving cycle ready			

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DTC / De- script Descript	y teria and Thresh-	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
P044 EVAP So tem Fund Check System Incorrect Purg e Flow	lambda control < 9.0%  • And • Deviation idle control < 40.0%	Time after engine start n.a.  Engine speed idle  Engine speed deviation 100 RPM  ECT > 60° C  Substitute ECT > 80° C  IAT > 5° C  Altitude < 2,700.0 m  Lambda control closed loop			- Check the EVAP System for Leaks. Refer to  S2.2.4 ystem, Checking For Leaks page 7.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.  - Check the Leak Detection Pump - V144 Refer to  L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump - V144 Refer to  L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706.	with respect to the correctness of information in



EVAP Sys-  2   EVAP Sys-  2   EVAP Sys-  2   EVAP Sys-  2   EVAP Present Cleak Pressure Check Sys-  2   EVAP Candidate
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DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P044 4 EVA P Sys- tem Purg e	EVAP Purge Valve Open Circuit	• Signal voltage > 4.40 – 5.40 V	<ul> <li>EVAP purge valve comman- ded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the EVAP Can- ister Purge Regulator Valve 1 - N80 Refer to
Control Valv e "A" Cir- cuit Ope n						⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688
10109111118	naes authorised by V	<sub>blksw</sub> agen AG. Volkswa	gen AG does not guarantee or a	CC & ALEMAN III MINING WILLIAM		- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page
omercial purposes, in part or in whol <sub>e, is</sub>			Gen AG does not guaranteeora	th respect to the correctness of information		704 .  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
Do Jenny Lo	(Bill do Wardoo V	Protectedb	ЭА подемено V V ОТКО И И ОТИ ОТИ ОТИ ОТИ ОТИ ОТИ ОТИ ОТИ ОТ	OS SERVICE DE LA CONTROL DE LA		<u>706</u> .



<b>\( \)</b>		a SportWagen, Gol can Tool - Edition (	f, Passat 2010 ➤ 07.2022	sed by Volkswage	n AG. Volkswagen A	AG does not guarantes on
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P045 5 EVA P Sys- tem Leak De- tec- ted - Larg e Leak	EVAP System Large Leak Pressure Check	• Time for pressure drop < 0.95 s	gine start 12.0 – 1,200.0 s  • Preceding engine shut-off time ≥ 21,600.0 s  • ECT 5 – 105° C  • ECT @ start 5 – 105° C  • Air temperature 5 – 95° C  • Air temperature drop after engine start < 8 K	• 180.0 s • Once / DCY	• 2 DCY	- Check the EVAP System for Leaks. Refer to  ⇒ \$2.2.4 ystem, Checking For Leaks", page 7.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ L3.6.18 eak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P045 6 EVA P System Leak Detected (Very Small Leak )	Strategy Description EVAP Sys- tem Very Small Leak Pressure Check	Time for pressure drop < 5.8 s  Nolkswagen AG. Volks  Nolkswagen AG. Volks  Time for pressure drop < 5.8 s	ters with Enable Conditions  Time after engine start 12.0 – 1,200.0 s  Preceding engine shut-off time > 21,600.0 s  ECT 5 – 105° C  ECT @ start 5 – 105° C  Air temperature 5 – 95° C  Air temperature drop after engine start ≤ 3 K  Intake manifold vacuum > -2,560.0 hPa  Altitude < 2,700.0 m  Vehicle speed 0 – 140 od. >= 0 km/h  Vehicle speed ones > 30 km/h  Selected gear any drive  Restart temperature difference > 52 K  Evap purge valve closed  LDP active  Hill driving  Delta ambient pressure -8.0 – 2.0 hPa  To remaine load not < 19.5 – 45.0%  And  Delta vehicle speed not >= -1 km/h	• 180.0 s • Once / DCY	• 2 DCY	agnostic Proce-
			<ul> <li>Additional:</li> <li>Vehicle acceleration &lt; 3.80 m/s2</li> <li>Delta engine load &lt; 767.98%/seg</li> </ul>			



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring MIL Illumina- Length tion	agnostic Proce- dure
P045 8 EVA P Sys- tem Purg e Con- trol Valv e "A" Cir- cuit Low	EVAP Purge Valve Short To Ground	• Signal voltage < 2.15 – 3.25 V		• 0.5 s • 2 DCY and	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688
P045 9 EVA P Sys- tem Purg e Con- trol Valv e "A" Cir- cuit High	EVAP Purge Valve Short To Battery Plus	• Signal current > 2.2 A	EVAP purge valve commanded on     Engine speed > 80 RPM  Adoption in the interest of the	• 0.5 s • Continuous • 2 DCY • Continuous	- Check the EVAP Canister Purge Regulator Valve 12-N80 Refer to E3.6.10 VAP Canister Purge Regulator Valve 1N80, Checking", page 688



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
AIR System Insufficient Flow Bank	Air System Flow Check During Cat- alyst Heat- ing	SAI pressure measured AG with SAI pressure sensor vs. modeled < 50.0 – 72.0%  Or Absolute deviation of raw pressure signal from filtered signal: mean value < 1.5 – 9.0 hPa	4080	antecoraccer	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 eco ndary Air Injection Sensor 1 G609, Checking", page 721 .  - Check the Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  ⇒ S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719 .



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P049 6 EVA P Sys- tem High Purg e Flow	Evaporative Emission System In- correct Purge Flow - Stuck open	Actual EVAP pump current vs. difference from last reading > 1.0 [-]	<ul> <li>Minimum ignition angle efficiency 20.0%</li> <li>Engine speed &gt; 20 RPM</li> <li>Engine speed Deviation &lt; 100 RPM</li> <li>Time after engine start &gt; 600.0 s</li> <li>ECT &gt; 60° C</li> <li>And</li> <li>ECT at start &lt; 60° C</li> <li>AAT &gt; 4 [-]</li> <li>And</li> <li>C 35° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>O2S front ready</li> <li>EVAP purge valve commanded off</li> </ul>		• 2 DCY	- Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to    E3.6.10 VAP Canister Purge Regulator Valve 1 N80: Checking". page 688 .  - Check the Leak Detection Pump - V144 Refer to    E3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
P050 1 Vehi- cle Spee d Sen- sor "A" Cir- cuit Rang e/ Per- for- man ce	Vehicle Speed Plausibility Check	• Vehicle speed < 6 km/h	Engine speed > 2,800 RPM     Engine torque > 120.0 Nm     Vehicle speed sensor no fault	• 10.5 s • Multiple	• 2 DCY	- Check the vehicle speed signal. Refer to Signal. Checking", page 729 Check the CAN-Bus terminal resistance. Refer to Signal Resistance. Refer to CAN-Bus Terminal Resistance, Checking", page 676 .



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P050 6 Idle Con- trol Sys- tem RPM - Low- er Than Ex- pec- ted	Idle Controller Out Of Range Low	Engine speed deviation < -100 RPM     And     RPM controller torque value >= calculated max value.	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT &gt; -48 °C</li> <li>IAT &gt; -48 °C</li> <li>Vehicle speed of ready</li> <li>Evap purge valve closed</li> <li>External torque request not demanded</li> <li>For manual transmission:</li> <li>Engine load &lt; 34.5%</li> </ul>	• 7.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338. Checking", page 726 .
P050 7 Idle Control System RPM - Higher Than Ex- pected	troller Out Of Range High	Engine speed deviation > 100 RPM     And     RPM controller torque value <= calculated min. value     Or     RPM controller P-portion and I-portion < -20.0 Nm	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> </ul>	• 7.0 s • Multiple	• 2 DCA	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
A Cold	Cold Start Monitoring Idle Con- troller Out of Range Low	Engine speed deviation < -100 RPM     And     RPM controller torque value >= calculated max. value	Venicle speed 0 km/h      Altitude < 2,700.0 m      ECT @ start <	• 5.0 s • Multiplek		- Check the Throttle Valve Control Module - GX3 / J338 Refer to T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
	Cold Start Monitoring Idle Con- troller Out of Range High	<ul> <li>Engine speed deviation &gt; 100 RPM</li> <li>RPM controller torque value &lt;= calculated min. value</li> <li>RPM controller P-portion and I-portion &lt; -20.0 Nm</li> </ul>	<ul> <li>Time after engine start &gt; 0.0 s</li> <li>Engine speed idle</li> <li>Vehicle speed 0 km/h</li> <li>Altitude &lt; 2,700.0 m</li> <li>ECT @ start &lt; 143° C</li> <li>IAT &gt; -48° C</li> <li>EVAP purge valve closed</li> <li>External torque request not demanded</li> <li>Catalyst heating active</li> </ul>	Profect	- SA nagswaylo	, KOTHON TOO THE



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
A Cold	Cold Start Monitoring VVT Actua- tor Intake Target Er- ror	Difference between target position vs. actual position > 10° CRK	gine start >= 10.0 s  • Engine speed >= 400 RPM  • Modeled oil temperature >= -48° C  • Catalyst heating active	• 5.0 s • Once / DCY	• 2 DCY	- Check engine oil for incorrect viscosity or in need of servicing (dirty oil). Oil that is not clear in color may be causing the sensor to operate incorrectly. The engine oil must be clean and of the correct viscosity in order for the sensor to operate properly. Check the vehicle paperwork to determine what oil viscosity has been used and when the last oil change was performed.
DOSO	Oxygen	Difference be-  Popularior in whole, is not be be-  Popularior in whole, is not be-  Populario	sunes sauthorised by Volkewage	• 40.0 s	• 2 DCY	Change the engine oil if necessary.  Check the Camshaft Adjustment Valve 1-N205 Refer to  C3.6.2 amshaft Adjust Ment Valve 1 N205. Checking", page 672.
6 ECM /PC M Pro- ces- sor	Sensors	tween measured calibration resistance in ECM and set value > 45.0 Ω	gine start > 40.0 s • Engine speed idle	• Multiple		Engine/ Motor Con- trol Module J623 Refer to appropri- ate repair
	Altitude Sensor Plausibility Check	Signal gradi-     ent > 50.0     hPa	OF EUROOD THEINE OF THE PROPERTY.	• 20.0 s • Multiple	un.	manuals and Testing 60
			Olected by con.	ld "	3. Diagno	osis and Testing 60



DTC / De- script ion	Monitor Strategy Description	Malfunction Criteria and Threshold Value	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		• Signal gradi- ent < -50.0 hPa			accept and light.	
	Altitude Sensor Short To Ground	Signal voltage < 0.20 V		<ul><li>0.2 s</li><li>Multiple</li></ul>	2	with respec
	Altitude Sensor Short To Battery / in Span Cir- Cuit	• Signal voltage > 4.88 V				with respect to the correctness of information.
	ECM: WDA Function Monitoring: WDA	General cause failure     Internal check failure		<ul><li>0.5 s</li><li>Continuous</li></ul>		of information
		Overvoltage detection fail-		7	100 institutos	
	ECM: EE- PROM Check	Check failed     Check	Photograph of the company of the com	Nolkswageny	1 <sup>1</sup> 11Qiyo	
	ECM: Self Check For Sensor IC internal Hardware Check (Electrical Adjustment Communi- cation, Volt- age Sup- ply)	Check	i read	Đ4 ~		
	ECM: 5V Supply Voltage In- ternal Hard- ware Check	Under-/ over- voltage detec- tion				
	ECM: A/D Converter Power-Up Calibration	Check failed	<ul> <li>Initialization phase active</li> </ul>			
	ECM: A/D Converter Adc-Cannel Conversion		<ul><li>Initialization phase active</li><li>Power-up calibration executed</li></ul>			
	ECM: EGAS Module Function Monitoring: A/D Con- verter	Comparison reference voltage with sensor volt- age incorrect				



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Test voltage check failed				
		Internal check failed	G Volkswagon 4			
	ECM: EGAS Module Function Monitoring: Torque	Comparison with allowed engine torque incorrect	Internal engine not speed > 600 RPM	auaiantee or acception	b.	
Tt Ori:	ECM: EGAS Module Function Monitoring: Engine Speed De- viation	Difference be- tween calcu- lated and in- ternal engine speed > 320 RPM	Internal engine speed > 520 RPM		liability with respect to the	
ad II. sesocare.	ECM: EGAS Module Function Monitoring: Coding ECM: EGAS Module Function Monitoring: Ignition	Internal check failed		AND THE STATE OF STREET OF	correctness of information in this co	
	ECM: EGAS Module Function Monitoring: Intern	System reaction incorrect	DA negewaylo	(40 Mbingo)		
	ECM: EGAS Module Function Monitoring: Injection Rate Limi- tation					
	ECM: EGAS Module Function Monitoring: Accelerator Position	Internal check failed				



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
	ECM: EGAS Module Monitoring Module	<ul> <li>Function controller check failed</li> <li>And</li> <li>Monitoring module check no failure</li> </ul>	SPI - interface no failure  sumessaumor  aumessaumor  aumessaumor	sed by Volkswage	n AG. Volkswagen A	G does not guarantee or	Cop <sub>to</sub>
	CAN: Internal Fault CAN Controller RAM	RAM error memory checksum er- ror	Initialization phase     Time after ignition on 500.0 ms	• 0.0 ms • Once / DCY			M liability with respec
7	Fuel Pump Relay Open Circuit Fuel Pump Relay Short To Ground	Signal voltage	Pump relay commanded off     Engine speed > 80 RPM  Pump relay com-	0.5 s     Continuous	• 2 DCY	- Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690 .	Control Manual M
9	Fuel Pump Relay Short To Battery Plus	• Signal current 0.60 – 1.20 A	Pump relay commanded on  Engine speed > 80 RPM	• 0.5 s Pando Continu- ous வந்தில்	• 2 DCY	- Check the Fuel Delivery Unit - GX1¹ / Fuel Pump Relay -J17 Refer to ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690 .	· ×



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P063 8 Throt tle Ac- tua- tor Con- trol Rang e/ Per- for- man ce Bank 1	Throttle Actuator Basic Settings Rationality Check Close Movement		<ul> <li>Engine speed 0 RPM</li> <li>Vehicle speed 0 km/h</li> <li>ECT &gt; -20° C</li> <li>IAT &gt; -20° C</li> <li>Case 1:</li> <li>Ignition on</li> <li>Case 2:</li> <li>Engine shut-off-time 3.0 s</li> <li>Number of checks 2.0 [-]</li> </ul>	• 5.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ∃ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .
	Throttle Actuator Basic Settings Signal Range Check @ Mechanical Stop Low	voltage not (0.40 – 0.80) V  Or TPS 2 signal voltage not (4.20 – 4.60) V  Or TPS1 + TPS2 not (4.82 – 5.18) V	<ul> <li>Engine speed 0 RPM</li> <li>Vehicle speed 0 km/h</li> <li>Case 1:</li> <li>Ignition on</li> <li>ECT -20 - 115° C</li> <li>IAT -20 - 143° C</li> <li>Case 2:</li> <li>Engine shut-off time 3.0 s</li> <li>ECT 5 115° C</li> <li>IAT 5 - 143° C</li> </ul>	• 0.3 s • Multiple	olkswagen AG does	not guarantes or acceptantisk
P064 1 Sen- sor Ref- eren ce Volt- age "A" Cir- cuit/ Ope n	ECM: Sensor Reference Circuit A Signal Range Check	ornoses. In Dart or	whole is n	• 0.5 s • Continuous	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module J623 Refer to appropriate repair manual.
			40/I/Idoo /	Protectedb	3. Diagno	osis and Testing 611





DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
1 Sen- sor Ref-	ECM: Sensor Reference Circuit B Signal Range Check	Signal voltage deviation > +/- 0.3 V		0.5 s     Continuous	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no other related codes set, replace the Engine/ Motor Control Module - J623 Refer to appropriate repair manual.	
7 Sen- sor Ref-	ECM: Sensor Reference Circuit C Signal Range Check	Signal voltage deviation > +/- 0.3 V	illie duries sauth	0.5 s     Continuous  ous  oused by Volkswag  oused by Volkswag	• 2 DCY	- If a related sensor voltage code is also set, refer to that sensor for diagnosis first. If no codes set, replace the Engine/ Motor Control Module J623 Refer to appropriate repair manual.	Faccaptan liability with respec
			Copyright of the purposes, in part or in whole, is not on the purposes, in part or in whole, is not on the purpose of the purp	opyright.	ord .5	А пэрвмэмо V чативтиро	respect to the correctness of information in this cool, the same of the correctness of information in this cool, the correctness of the correctn



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Α	Fuel System Out Of Range	I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]      I - portion of 3rd lambda control loop > 0.03 [-]	Engine speed     1,400 – 3,600     RPM     Modeled exhaust     gas temp 350 –     1,000° C     Engine load 20.3     – 54.8%     Lambda control     Closed loop     2nd lambda control closed loop     3rd lambda control closed loop     O2S rear ready     Electrical check ready     O2S heater rear ready no fault		• 2 DCY  Des not guarantee of ac	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in  C3.1 heck", page 14 and/or to appropriate repair manual.  Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to Sensor for Bank 1 Catalytic Converter G465 Checking (CBUA)", page 680.  Check the Oxygen Sensor 1 After Catalytic Converter G47 Refer to Sensor 1 After Catalytic Converter GX7 Refer to CONVERTER GX1
P150 A En- gine Off Tim- er Per- for-	Engine-Off- Time Com- parison Of Engine Off Time From Instrument Cluster Control Unit With En-	Difference be- tween engine- off-time and ECM after-run time < -12.0 s	Key on after     ECM after run     time active	• 6.0 s • Once / DCY	• 2 DCY	gen Sensor 1 After Cata- lytic Con- verter GX7, Checking", page 713.  If ignition off B+ is lost to ECM, this code will set. Check pow- er and ground in- puts to ECM first. Refer to
man ce	gine After Run Time					Wiring Dia- grams for pin loca- tions. If all power/ grounds to ECM are



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Difference be- tween engine- off-time and ECM after-run time > 12.0 s	ECM after run time active  CAN active			present, re- place the Engine/ Motor Con- trol Module - J623 Refer to appropri- ate repair manual.
P208 8 "A" Cam shaft Posi- tion Ac-	VVT Actua- tor Intake Short To Ground	• Signal voltage < 2.15 – 3.25 V	<ul> <li>Camshaft valve off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to
tua- tor Con- trol Cir- cuit Low			seit is dunes sauth	hised by Vol.		shaft Position Sensor G40, Checking", page 674.
Bank 1			Camshaft valve off  Engine speed > 80 RPM  Camshaft valve  Camshaft valve  Camshaft valve			Camsnart Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 am- shaft Adjust- ment Valve 1 N205, Checking", page 672.
shaft Position Actua- tor Control Cir-	VVT Actua- tor Intake Short To Battery Plus	• Signal current > 2.2 A	Camshaft valve on Engine speed > 80 RPM  RPM  AUTHORITIES  OF THE COMPANY OF THE	• 0.5 s • Continuous	• 2 DCY	- Check the Camshaft Position Sensor - G40 Refer to  \$\frac{\infty}{C3.6.3 am-shaft Position Sensor G40, Check-fing page 674}\$
cuit High Bank 1						- Check the Camshaft Adjustment Valve 1 - N205 Refer to  ⇒ C3.6.2 am- shaft Adjust- ment Valve
						1 N205, Checking", page 672



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P209 6 Post Cat- alyst Fuel Trim Sys- tem Too Lean Bank 1	ommercial purposes, in part or in whole, is not bernited.	I-portion of 2nd lambda control loop < -0.040 [-] (CBTA)     I-portion of 2nd lambda control loop < -0.030 [-] (CBUA)     (CBUA)  Research for each by Volkews  Allowed Annother and the second s	<ul> <li>O2S front ready</li> <li>O2S rear ready</li> <li>O2S heater front active</li> <li>O2S heater rear active</li> <li>Fuel cut off not active</li> <li>Catalyst heating not active</li> <li>SAI not active</li> </ul>	• Multiple	• 2 DCY	- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713 Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680 .



DTC / De- script ion	Monitor Strategy Description	teria and Thresh- old Value	Secondary Parame- ters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P209 7 Post Cat- alyst Fuel Trim Sys- tem Too Rich Bank 1	Fuel System Out Of Range Country of the North Office of Country	I-portion of 2nd lambda control loop > 0.040 [-] (CBTA)  I-portion of 2nd lambda control loop > 0.030 [-] (CBUA)	Modeled exhaust gas temp. 400 – 1,000° C     Exhaust gas mass flow 18.0 – 180.0 kg/h     Lambda control closed loop     Lambda control not at min or max limit     2nd lambda control closed loop     O2S front ready     O2S rear ready     O2S heater front active     O2S heater rear active     Fuel cut off not active     SAI not active	• 140.0 s • Multiple		- Check the fuel pressure and delivery quantity. Refer to fuel system mechanical testing in ⇒ C3.1 heck", page 14 and/or to appropriate repair manual Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7, Checking", page 713 Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter GX7. Checking (CBUA)", page 680 .
P210 1 Throt tle Ac- tua- tor "A" Con- trol Mo- tor Cir- cuit Rang e/	Throttle Actuator Rationality Check	Deviation throttle value angles vs calculated value > 4.0 – 50.0%		<ul><li>0.5 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Checking", page 726 .



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Per- for- man ce	Throttle Actuator Signal Range Check	<ul> <li>Duty cycle &gt; 80.0%</li> <li>And</li> <li>ECM power stage no failure</li> </ul>		• 5.0 s • Multiple		
P210 6 Throt tle Ac- tua- tor Con- trol Sys-		Internal check	<ul> <li>Duty cycle &gt; 80.0%</li> <li>Or</li> <li>Deviation throttle value angle vs. calculated value &gt; 4.0 - 50.0%</li> </ul>	• 12.0 s • Multiple	• 2 DCY	- Check the Throttle Valve Control Module - GX3 / J338 Refer to  T3.6.28 hrottle Valve Control Mod-
tem - Forc ed Limi- ted Pow- er	Throttle Actuator Functional Check Throttle Actuator Temperature / Current Monitoring	Internal check failed				ule GX3 / J338, Checking", page 726 .
	Throttle Actuator Short To Battery Plus / Short To Ground	Internal check     Sauth	<sub>nised</sub> by Volkswagen AG. Vol	kswagen AG do <sub>e.</sub>	anot guarantee or an	
2 Throt tle/ Ped- al Posi- tion Sen- sor/ Switc h "D" Cir- cuit Low	Accelerator Position Sensor 1 Out Of Range Low	• Signal voltage   < 0.6 Voltage    Signal voltage   Sign		• 0.5 s • Continuous	• 2 DCY	Check the Accelerator Pedal Module -GX2 Refer to  3.6.1 ccelerator Pedal Module GX2 Checking", page 670
3	Accelerator Position Sensor 1 Out Of Range High	• Signal voltage	Protected by copyright	• 0.5 s • Continuous	• 2 DCY	- Check the Accelerator Pedal Module -GX2 Refer to  A3.6.1 ccelerator Pedal Module GX2, Checking", page 670.

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DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P212 7 Throt tle/ Ped- al Position Sen- sor/ Switc h "E" Cir- cuit Low	Position Sensor 2 Out Of Range Low	oses, in part or is	, isologi, is	0.5 s     Continuous	• 2 DCY	- Check the Accelerator Pedal Module -GX2 Refer to   → A3.6.1 ccelerator Pedal Module GX2, Checking", page 670.
P212 8 Throt tle/ Ped- al Posi- tion Sen- sor/ Switc h "E" Cir- cuit High	Position Sensor 2 Out Of Range High	• Signal voltage > 2.4 V	The solution of the state of th	• 0.5 s • Continuous	• 2 DCA	- Check the Accelerator Pedal Module GX2. Refer to  A3.6.1 ccelerator Pedal Module GX2, Checking", page 670
8	Accelerator Position Sensor 1 And 2 Ra- tionality Check	Signal voltage sensor 1 vs. 2 > 0.167 – 0.703 V	<ul> <li>Signal voltage sensor 1 &gt; 445.0 mV</li> <li>Signal voltage sensor 2 &gt; 445.0 mV</li> </ul>	• 0.5 s • Continuous	• 2 DCY	- Check the Accelerator Pedal Mod- ule -GX2 Refer to  A3.6.1 ccel- erator Pedal Module GX2, Check- ing", page 670.



DTC / De- script ion Monitor Strateg Descripti	teria and Thresh-	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P217 Fuel System Too System Too Lean @ Part Load Too Lean Off Idle Bank 1	ue > 28.0%	<ul> <li>Time after engine start n.a.</li> <li>Engine speed 1,320 – 4,600 RPM</li> <li>Engine load 25.0 – 46.0%</li> <li>Mass air flow 45.0 – 300.0 kg/h</li> <li>ECT &gt; 59° Combon Company Com</li></ul>		• 2 DCY  wagen AG does not  "DA uabbanesho	system me- chanical testing in  ⇒ C3.1 heck", page 14 and/or to ap- propriate re- pair manual.  - Check the Fuel Injectors. Refer to ⇒ F3.6.13 uel Injectors, Checking", page 694 .  - Check the Oxygen Sensor 1 Before Catal lytic Con- verter - CX10 Re-



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
						J17, Checking", page 690 .  - Check the Intake Mani-	
			me <sup>s</sup>	authorised by Volks	<sub>wage</sub> n AG. Volkswa	GX9 Refer to 13.6.15 htake Manifold Sensor GX9, Checking", page 698	Mee Or accept
			the total burposes, in part or in whole, is not be mile to the state of the state o	Roo ilania de la copulación de la copula	Protecti	Dade 698	ce of accept and liability with respect to the correctness of information in this cook



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
script ion	Fuel Sys- tem Too	• Adaptive value < -28.0%	Conditions  Time after engine start n.a.  Engine speed 1,320 – 4,600 RPM  Engine load 25.0 – 46.0%  Mass air flow 45.0 – 300.0 kg/m  ECT > 59° C  Or  Substitute ECT	• 25.0 s • Multiple  AG. Volkswage	• 2 DCY	
						to <u>⇒</u> <u>I3.6.15 ntake</u>



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		Sauttori	sedby Volkswagen A.G. Volks	wagen AG does n	ot guarantee or accept a	Manifold Sensor GX9, Checking", page 698
		old Value  Old Value				Regulator Valve 1 - N80 Refer to E3.6.10 VAP Canister Purge Regulator Valve 1 N80. Checkling page
		and the state of commercial	Protected by Copyright	-DA negswey	NO WORTH WAY OF THE PLANT	Information in this oto.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
1 Cooling System Performan ce	A Expect Range	Thers_03:     Cooling system temperature to low after a sufficient air mass flow integral 75° C	<ul> <li>Thers_02:</li> <li>ECT @ start -10 - 60° C</li> <li>AAT &gt; -10° C</li> </ul>	• 2.0 s • Once / DCY	• 2 DCY	- Check the Engine Cool- ant Temper- ature Sensor -G62 Refer to ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683.
le, is not be	illited Intess authorise	d by Volkswagen AG. Vo	<ul> <li>Fuel cut off not active</li> <li>And</li> <li>Engine load 14.0 – 95.0% es not guerar.</li> <li>Air mass_01:</li> <li>Integrated air mass depending on engine temp. at start and AAT 4.0 – 13.5 kg/h (CBTA)</li> <li>Integrated air mass depending on engine temp. at start and AAT 4.0 – 13.47 kg/h (CBUA)</li> <li>Depending on temp. at engine start and min. observed AAT for longer than 120.0 – 180.0 s</li> </ul>	tee of acceptablishing was	59.J.U.'''	- Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet -G83 Refer to     E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking*,
or commercial purposes, in part or in who	Beniado Binado iusin	Profected by Valoring Advantage (Advantage (	Depending on temp. at engine start and min. observed AAT for more than 4.0 for more	indo Singa tropical state of the state of th	$_{ m spect}$ to the correctness of $inform_{affo}$	page 685 .  - Check the engine coolant thermostat. Refer to appropriate repair manual.



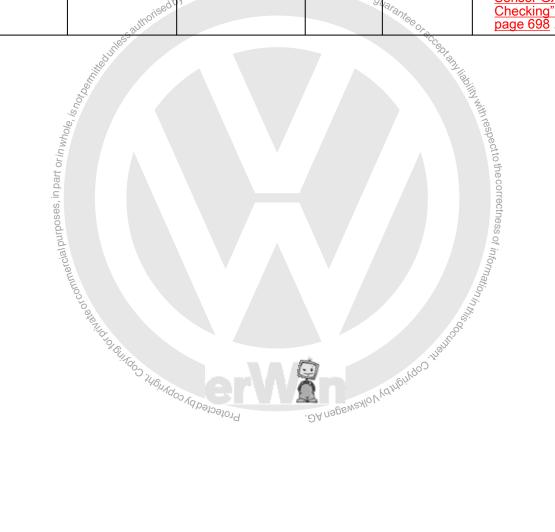
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure	
4 En- gine Cool-	Fan Control Coolant Tempera- ture Sensor Short To Ground	• ECT outlet > 140° C	wholese anthorises	• 2.0 s • Continuous ous out	• 2 DCY G. Volkswagen AG	- Check the Engine Cool- ant Temper- ature Sensor on Radiator Outlet G83. Refer to E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685	d any liability with respect
5 En- gine Cool- ant Tem-	Fan Control Coolant Tempera- ture Sensor Short To Battery / Open Cir- cuit	• ECT outlet < -40° C	Secondary Parameters with Enable Conditions  Conditions  Thomas of the second part of the	• 2.0 s • Continuous	• 2 DCY	- Check the Engine Coolant Temperature Sensor on Radiator Outlet -G83 Refer to E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83. Checking", page 685.	kery liability with respect to the correctness of information in this object.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
7	Fuel Sys- tem Too Lean @ Idle	Adaptive val- ue > 5.02%	<ul><li>Time after engine start n.a.</li><li>Engine speed &lt; 860 RPM</li></ul>	• 40.0 s • Multiple	• 2 DCY	Check the vacuum lines visually for leaks.
Lean at Idle Bank 1			<ul> <li>Mass air flow &lt; 35.0 kg/h</li> <li>ECT &gt; 59° C</li> <li>Or</li> </ul>	<sub>W</sub> agen AG. Volks	wagen AG does not	- Check the intake system visually for leaks (false air).
		onmercial purposes, in part or in whole, is p	<ul> <li>Substitute ECT n.a.</li> <li>AT &lt; 85° C</li> <li>Ratio manifold</li> </ul>		.DA nagen Adj	fuel pressure and delivery quantity. Refer to fuel system mechanical testing in C3.1 heck", page 14 and/or to appropriate repair manual.  Check the Fuel Injectors. Refer to Checking", page 694  Check the Oxygen Sensor 1  Before Catalytic Converter - GX10 Refer to Catalytic Converter Catalytic Converter GX10. Checking", page 716  Check the Fuel Delivery Unit - GX1-/ Fuel Pump Relay J17 Refer to Check the Fuel Delivery Unit - GX1-/ Fuel Pump Relay J17 Refer to Check the Fas. 6.11 uel
						Delivery Unit GX1 / Fuel Pump Relay



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
		umorizedh	y Volkswagen AG. Volkswag	en AG does not go	larantee C	J17, Check- ing", page 690 .  - Check the Intake Mani- fold Sensor - GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .





	DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	8	Fuel Sys- tem Too Rich @ Idle	Adaptive val- ue < -5.02%	<ul><li>Time after engine start n.a.</li><li>Engine speed &lt; 860 RPM</li></ul>	• 40.0 s • Multiple	• 2 DCY	Check the fuel pressure and delivery quantity. Refer to fuel
	n			Mass air flow < 35.0 kg/h			system me- chanical testing in
	Bank 1			• ECT > 59° C • Or			<u>⇒</u> C3.1 heck", page 14
			AG Volkswagon	Substitute ECT n.a.			and/or to ap- propriate re- pair manual.
		cedby Volks	vagen AG. Vollowagen,	• Ratio manifold			<ul><li>Check the</li></ul>
	Inless &	Lithorise		pressure to ambient pressure			Fuel Injectors. Refer to <u>→</u> F3.6.13 uel
37.5	do di			• Or	W lab.		<u>Injectors,</u> <u>Checking",</u>
; isnoto				Valve overlap < 40° CRK	THE WHAT		page 694.
in whole				Delta part load adaptation ready	aspectto		Oxygen Sensor 1
part or				Lambda control closed loop	thecor		Before Cata- lytic Con- verter -
Joses, Ir				Evap purge valve closed	rectnes		GX10 Re- fer to
aze or commercial purp	**************************************		Nagen AG. Volkswagen,	If low fuel signal then wait until fuel consumption n.a.	liability with respect to the correctness of information in this object.		O3.6.23 xy- gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716
	*10 	D ILIGUADOO NA POJ	AG. Protec	лөбемэүю Л Лай Дир Лоркамадел			- Check the Fuel Deliv- ery Unit - GX1- / Fuel Pump Relay -J17 Refer to
							⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Check- ing", page 690
							<ul> <li>Check the Intake Manifold Sensor - GX9 Refer to</li> </ul>
						l	<u>⇒</u> <u>I3.6.15 ntake</u>



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value. Vol	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
cial purposes, in part or in whole, is not be	illiedunes sauthorise	Ados Value Maria de la Capa de la	Secondary Parameters with Enable Conditions  Swage HAG does not Sugarant	es or acety and lighting miles	to the correctness of info	Manifold Sensor GX9, Checking", page 698.  - Check the EVAP Canister Purge Regulator Valve 1 - N80 Refer to  ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688.
, polomme	Relited of Editado Julijus	Protected by copy	- DA nagswayo V Volkewagen A G.	indo o rubindo in individual indivi	n <sub>as:</sub>	



DTC / De- scrip ion	Strategy	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
5 O2 Sen- sor Sig- nal Bias	s authorised by v	Delta lambda of 2nd lambda controlwage loop > 0.065 [-] (CBTA)  Delta lambda of 2nd lambda control loop > 0.070 [-] (CBUA)	Delta engine load < 12.0%      Exhaust gas mass flow 18.0 = 180.0 kg/h	• 100.0 s • Multiple • Multiple  • Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ O3.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716 .  - Check the Fuel Delivery Unit - GX1- / Fuel Pump Relay -J17 Refer to  ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690 .  - Check the Intake Manifold Sensor GX9 Refer to  ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698 .





DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P223 7 O2 Sensor Positive Current Control Cir-	Oxygen Sensors Front Open Circuit Pump Cur- rent (IP)	O2S signal front < 1.70 V  And Fuel cutoff > 3.0 soots and the state of the state	O2S ceramic temp > 720° C  Lambda modulation > 02S ceramic temp > 720° C  Lambda control closed loop  Lambda control closed loop	• 5.0 s • Multiple does not guarante	• 2 DCY	- Check the Oxygen Sensor 1 Before Cata- lytic Con- verter - GX10 Re- fer to  ⇒ O3.6.23 xy- gen Sensor 1 Before
cuit/ Ope n Bank 1 Sen- sor 1	urposes, in part or in whole, is not below.	0.10 [-]	Heater control closed loop			
P224 3 O2 Sensor Referen ce Voltage Circuit/ Ope n Bank 1 Sensor 1	Oxygen Sensors Front Open Circuit Nernst Volt- age (UN)	<ul> <li>O2S signal front &gt; 4.70 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> <li>O2S signal front &lt; 0.20 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> </ul>	• Heater control active	• 25.5 s • Multiple	• 2 DCY Information in this color in the col	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ O3.6.23 xygen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.
1 O2 Sen- sor	Oxygen Sensors Front Open Circuit Vir- tual Mass (VM)	<ul> <li>O2S signal front 1.47 – 1.53 V</li> <li>And</li> <li>Internal resistance &gt; 950.0 Ω</li> </ul>	<ul> <li>Modeled exhaust gas temp &lt; 750 Ω</li> <li>No fuel cutoff &gt; 2.0 s</li> <li>Heater control active</li> </ul>	• 30.5 s	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ O3.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P225 7 AIR Sys- tem Con- trol "A" Cir- cuit Low	Air Pump Relay Short To Ground	• Signal voltage < 3.0 V	<ul> <li>Pump relay commanded off</li> <li>Engine speed &gt; 80 RPM</li> </ul>	0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Sec- ondary Air Injection Pump Motor -V101 Re- fer to
LOW						⇒ S3.6.24 eco ndary Air In- jection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719.
8 AIR Sys- tem Con- trol "A" Cir- cuit	Air Pump Relay Short To Battery Plus	• Signal current 0.60 – 1.20 A	manded on Engine speed > 80 RPM	0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Pump Relay -J299- / Sec- ondary Air Injection Pump Motor -V101 Re-
High			• Mass air flow	gp\/ow		S3.6.24 eco ndary Air Injection Pump Relay J299 / Secondary Air Injection
0 O2 Sen- sor Sig- nal	Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 30.0% En- richment) (CBTA)	O2S signal rear not oscil- lating at refer- ence < 600.0 mV	<ul> <li>Mass air flow 22.0 – 120.0 kg/h (CBTA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s (CBTA)</li> <li>2nd lambda con-</li> </ul>	• 210.0 s (CBTA) • Multiple	• 2 DCY	Pump Motor V101, Checking", page 719.  - Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy- gen Sensor 1 After Catalytic Converter GX7, Checking", page 713.
Bank 1 Sen- sor 2			• 2nd lambda control closed loop	Mdoo Agpai	W Q	yerter GX7, Checking", page 713.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 20.0 - 30.0% Closed Loop En- richment) (CBUA)		<ul> <li>Mass air flow 30.0 – 120.0 kg/h (CBUA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 10.0 s (CBUA)</li> <li>2nd lambda control closed loop</li> </ul>	• 80.0 s (CBUA) • Multiple		- Check the Center Oxy- gen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 en- ter Oxygen Sensor for Bank 1 Cat- alytic Con- verter G465, Checking (CBUA)", page 680.
sor Sig- nal Bias ed/ Stuc k Rich	Sensors Rear 2 -	(CBTA)  • O2S signal rear not oscilly lating at reference 600.0 mV.	<ul> <li>(CBTA)</li> <li>Mass air flow 22.0 – 120.0 kg/h (CBTA)</li> <li>Modeled exhaust gas temp &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s (CBTA)</li> <li>Fuel cut off &gt; 3.0 s</li> <li>2nd lambda control closed loop</li> </ul>	210.0 s (CBTA)     (CBTA)     Multiple     Multiple	• 2 DCY	- Check the Oxygen Sensor 1 After Catalytic Converter - GX7 Refer to  ⇒ O3.6.22 xy-gen Sensor 1 After Catalytic Converter GX7. Checking", page 713.
	or commercial purposes, ir	Aldro Offiliado Habirado Ago			or information in this or other in the state of information in the state of informatio	) 



DTC   Monitor / De- script   Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
Oxygen Sensors Rear (Bina ry Check ( Response Time At Fuel Cut Off (CBTA	of cut off > 6.0 s  • And • Measurement	<ul> <li>Lean voltage &lt;= 191.0V</li> <li>O2S rear ready</li> <li>Rear O2-sensor signal oscillating</li> <li>Monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2-Sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust</li> </ul>	6.0 s (CBTA)     Multiple  SoyVolkswagen A	.G. Volkswagen A.G	does not guarantes or ac
Oxygen Sensors Rear 2 - Point - LS Stuck Rich (If Sensor Stuck Rich 7.0% - 15.0% Closed Loop En- leanment) Enlean- ment Is No Successfu Waiting Fo Next Fuel Cut Off (CBUA)	ence > 600.0 mV	(CBUA)  • Mass air flow 30.0 - 120.0 kg/h	• 80.0 s (CBUA) • Multiple	. ĐAng	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to  ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.





DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P227 4 O2 Sen- sor Sig- nal Bias ed/ Stuc k Lean Bank 1 Sen- sor 3	Oxygen Sensors Rear (Binary LSF) Check Of Response Time At Fuel Cut Off (CBUA)  Oxygen Sensors Rear 2 - Point - LSF Stuck Lean (If Sensor Stuck Lean: 30.0% Enrichment)	(CBUA)  Response time at fuel cut off > 6.0 s  And  Measurement range from fuel cut off to voltage threshold <= 191.0 mV  And  Number of checks (initial phase) >= 1.0 [-]  Or  Measurement range from fuel cut off to O2 mass flow threshold >= 4,000.0 mg  And  Number of checks (initial phase) >= 1.0 [-]  O2S signal rear not oscillating at reference < 600.0 mV	<ul> <li>(CBUA)</li> <li>Rich voltage (enable) &gt;= 548.0V</li> <li>Lean voltage n.a.</li> <li>O2S rear ready</li> <li>Rear O2-sensor signal oscillating monitoring ready</li> <li>EVAP purge valve diagnosis ready</li> <li>O2S front ready</li> <li>Fuel cut off active</li> <li>Front O2 - sensor lambda signal &gt; 4.0 [-]</li> <li>Modeled exhaust gas temp. &gt; 480° C</li> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> <li>Mass air flow 22.0 - 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s</li> <li>2nd lambda control closed loop</li> </ul>	• 210.0 s • Multiple	• 2 DCY  • 2 DCY  • 2 DCY	— Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to Sensor for Bank 1 Catalytic Converter G465. Checking (CBUA) page 680 .
					3. Diagno	osis and Testing 6



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
ed/ Stuc k Rich	Oxygen Sensors	O2S signal rear not oscillating at reference > 600.0 mV      Response time at fuel	<ul> <li>Mass air flow 22.0 – 120.0 kg/h</li> <li>Modeled exhaust gas temp. &gt; 350° C</li> <li>O2S rear readiness &gt; 30.0 s</li> <li>Fuel cut off active</li> <li>2nd lambda control closed loop</li> <li>Rich voltage (enable) &gt;= 548.0V</li> </ul>	<ul><li>210.0 s</li><li>Multiple</li><li>4.5 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Center Oxygen Sensor for Bank 1 Catalytic Converter - G465 Refer to ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680.
sor 3		<ul> <li>cut off &gt; 6.0 s</li> <li>And</li> <li>Measurement range from fuel cut off to voltage threshold &lt;= 191.0 mV</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> <li>Or</li> <li>Measurement range from fuel cut off to O2 mass flow threshold &gt;= 7,000.0 mg</li> <li>And</li> <li>Number of checks (initial phase) &gt;= 1.0 [-]</li> </ul>	<ul> <li>Slope of exhaust mass &lt; 50.0 kg/h</li> <li>Rear O2 sensor internal resistance &lt;= 131,070.0 Ω</li> </ul>	kG. Volkswagen	AG does not guarante	aced tany liability with respect to the correctness
636	Rep. Gr.ST - C	Generic Scan Tool	Protected by copyright, Copyright, Copyrigon, Copyrigon	ye.	удиру у олкемедел у	Aliability with respect to the correctness of information in this contraction is a second contraction of the correctness of information in this contraction is a second contraction of the correctness of information in this contraction is a second contraction of the correctness of the correctnes





DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
9 MAP	Leak to Intake Manifold Adaptation Value Monitoring	Offset value throttle mass flow > 13.0 kg/h	<ul> <li>Desired mass flow 0.0 – 25.0 kg/h</li> <li>EVAP purge valve closed</li> <li>EGR off</li> </ul>	• 10.0 s • Multiple	• 2 DCY	Check for air leaks near the throttle body, oil fill cap not tight or oil dipstick not seated in tube. Also check for any engine gaskets that can cause additional air to enter the crankcase can set this fault as the PCV system is not metered. If a vacuum leak or crankcase seal is the cause, the idle may be rough or unstable.
						Check the     Intake Manifold Sensor -     GX9 Refer     to
		es authorised by Volks	<sub>Nagen</sub> AG. Volkswagen AG o	loes not guarantes	9/ <sub>8</sub> C	∃3.6.15 ntake Manifold Sensor GX9, Checking", page 698
	ole, is not be mil	Burito			Stan liability with rest	- Check the Throttle Valve Con- trol Module - GX3 / J338 Refer to
	urposes, in part or in w				ect to the correctness o	⇒ T3.6.28 hrot- tle Valve Control Mod- ule GX3 / J338, Checking", page 726
	wate or commercial F	250	Nagen AG. Volkswagen AG.		f information in this occurrence	<ul> <li>Check the EVAP Can- ister Purge Regulator Valve 1 - N80 Refer to</li> </ul>
		Red Billedo JABUNDO NA POR		2 Valuging	00,	⇒ E3.6.10 VAP Canister Purge Regu-
_		- Adba	Protect.	News of the March	3. Diagno	osis and Testing 63

DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
						lator Valve 1 N80, Check- ing", page 688
P230 0 Igni- tion Coil "A" Pri- mary Con- trol Cir- cuit Low	Ignition Coils Short To Ground	• Signal current > 24.0 mA	• Engine speed > 680 RPM	<ul><li>0.5 s</li><li>Continuous</li></ul>	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.
P230 1 Ignition Coil "A" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal voltage > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P230 3 Ignition Coil "B" Primary Control Circuit Low	Ignition Coils Short To Ground	• Signal current > 24.0 mA	• Engine speed > 680 RPM  • Engine speed > 680 RPM	• 0.5 s • Continue ous	2 DCY gen AG. Volkswage	- Check the   Ignition Coils     With Power Output     Stage. Reference to     13.6.14 gnition Coils     With Power Output     Stage.     Checking",     page 696
P230 4 Ignition Coil "B" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal voltage > 5.1 – 7.0 mA	Engine speed > 680 RPM  Output  O	• 0.5 s • Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
638	Rep. Gr.ST - C	Generic Scan Tool	J. B. HAROLO	ilibinadoo Aqpajoa	Jord .é	DA nagewealo V vu ingii va



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P230 6 Ignition Coil "C" Primary Control Circuit Low	Ignition Coils Short To Ground	• Signal current > 24.0 mA	680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
P230 7 Ignition Coil "C" Primary Control Circuit	Ignition Coils Short To Battery Plus	• Signal voltage	• Engine speed > 680 RPM	• Continuous Rock	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
tion	Ignition Coils Short To Ground	• Signal current > 24.0 mA	• Engine speed > 680 RPM	• 0.5 s • Continu- ous	Y Dectness of information in the	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696 .
P231 0 Ignition Coil "D" Primary Control Circuit High	Ignition Coils Short To Battery Plus	•് <sup>ഗ്</sup> Sįgnal voltage > 5വ് 7.0 mA	• Euglie sheed > 680 KbW	(A) O.O O	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P231 2 Ignition Coil "E" Primary Control Circuit Low	Ignition Coils Short To Ground	• Signal current > 24.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P231 3 Ignition Coil "E" Primary Control Circuit High	Ignition Coils Short To Battery Plus	• Signal voltage > 5.1 – 7.0 mA	• Engine speed > 680 RPM	0.5 s     Continuous	• 2 DCY	- Check the Ignition Coils with Power Output Stage. Refer to  ⇒ I3.6.14 gnition Coils With Power Output Stage. Checking", page 696.
P240 0 EVA P Sys- tem Leak De- tec- tion Pum p Con- trol Cir- cuit/ Ope n	LDP Open Circuit	• Signal voltage > 4.40 - 5.60 V	off • Engine speed > 80 RPM 80 RPM		• 2 DCY wagen AG does not	- Check the Leak Detection Pump - V144 Refer to  L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .



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04,004,pp.;	DTC I De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	S	econdary Parame <sup>2</sup> ters with Enable Conditions	3	Monitoring Length Time	N	IIL Illumina- tion	C ag	omponent Di- gnostic Proce- dure
or commercial purposes, in part or in whole, is not be		LDP Short To Ground	• Signal voltage < 2.15 – 3.25 V	•	LDP commanded off Engine speed > 80 RPM		s tinu- 0.5 second to the correctness of information in this	•	2 DCY	_	Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak
		Po jug <sub>indoongpej</sub>	A.G. Protec	y uə	Bent Copyright by Volkswag						Detection Pump V144, Checking (4 Pin)", page 706
	2	LDP Short To Battery Plus	• Signal current > 3.0 A	•	LDP commanded on Engine speed > 80 RPM	•	0.5 s Continu- ous	•	2 DCY	_	Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704.
	trol Cir- cuit High									_	Check the Leak Detec- tion Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706.

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		LIM			Ox	
DTC / De- script ion	isno	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL flumina- tion	Component Diagnostic Procedure
	Reed Sensor Rationality Check Unable To Close	• Low signal voltage > 0.5 s	<ul> <li>Vehicle speed &gt;= 0 km/h</li> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Evap purge valve ready</li> <li>LDP commanded</li> </ul>	• 0.5 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .
4	Reed Sensor Rationality Check Unable To Open	<ul> <li>High signal voltage &gt; 12.0 s</li> <li>And</li> <li>Number of checks 30.0 [-]</li> </ul>	<ul> <li>off</li> <li>Time after engine start 12.0 – 1,200.0 s</li> <li>Preceding engine shut-off time &gt; 21,600.0 s</li> <li>ECT 5 – 105° C</li> <li>ECT @ start 5 – 105° C</li> <li>Air temperature 5 – 95° C</li> <li>Altitude &lt; 2,700.0 m</li> <li>Intake manifold vacuum &gt; -2,560.0 hPa</li> <li>Restart temperature difference &gt; 52 K</li> <li>Vehicle speed &gt;= 0 km/h</li> </ul>	• 12.0 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704 .  - Check the Leak Detection Pump - V144 Refer to ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706 .



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	authorised	Cumulative time of high signal voltage during pump- ing > 10.0 s      Volks      Volks      Volks	<ul> <li>Vehicle speed ones &gt; 30 km/h</li> <li>Selected gear any drive</li> <li>Evap purge valve ready</li> <li>LDP commanded on</li> </ul>	• 120.0 s • Once / DCY		
P240 A EVA System P System P System P P System P P P P P P P P P P P P P P P P P P P	EVAP Leak Detection Pump Open Cir- cuit	• Signal voltage > 4.7 – 5.4 V	Evap pump heater commanded off	• Continuous ous ous ous ous ous ous ous ous ous	ect to the correctness of inc	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.
P240 B EVA P Sys- tem Leak De- tec- tion Pum p Heat er Con- trol Cir- cuit Low	EVAP Leak Detection Pump Short To Ground	• Signal voltage < 2.74 – 3.26 V	er commanded	• 0.5 s • Continu-	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P240 C EVA P Sys- tem Leak De- tec- tion Pum p Heat er Con- trol Cir- cuit High	EVAP Leak Detection Pump Short To Battery Plus	> Ž.2 – 4.0 A	Evap pump heater commanded on  November 1988  State of the state	<ul> <li>0.5 s</li> <li>Continuous</li> </ul>	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.





DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P240 7 EVA P Sys- tem Leak De- tec- tion Pum p Sens	EVAP Leak Detection Pump Sig- nal Check During En- gine Off	<ul> <li>Fluctuation of evap pump current during reference measurement &gt; 1 mA</li> <li>Or</li> <li>Drop of evap pump current during pump phase &gt; 6 mA</li> </ul>	ture @ engine start >= 4° C  Difference be- tween ECT and IAT @ engine start <= 15 K  Ambient air tem- perature < 35; > 4° C	• 800.0 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or
e Cir- cuit Inter- mit- tent/ Er-		• For time >= 3.0 s	<ul> <li>Altitude &lt;= 2700 m</li> <li>Time since engine start in preceding dcy &gt;= 600.0 s</li> <li>Change in bat-</li> </ul>			⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.
	,thoris	<sub>d by</sub> Volkewagen AG. Vo	tery voltage during monitoring < 1.0 V  • Engine off time kswærens, 0 s  • Vehicle speed 0 km/h	llo <sub>e c</sub>		
n'in whole, is not b	illi dindessau	<sub>gd</sub> by Volkewagen AG. Vo	ing monitoring < 1.0 V  Engine off time kswate 5.0 s  Vehicle speed 0 km/h  Evap purge adaptation < 5.0 [-]  Deviation of filtered evap pump current during reference measurement within range <= 1 mA  Change in relative evap pump current during monitoring n.a.  Within time n.a.  (During ECM keep alive-time after ignition off, max. time) < 900.0 s	O' & CC & DI AND HIS HIS MAN	threspectto	
or commercial purposes, in part or,			<ul> <li>Change in relative evap pump current during monitoring n.a.</li> <li>Within time n.a.</li> <li>(During ECM keep alive-time</li> </ul>		the correctness of <i>inform</i>	
mmo jo	Realid to Guadoo 1461	Protected by Copy	Airbag not activated     (After MIL illumination because	(400). Transludos	ation .	
	7.4	Protected by Copp.	of any EVAP leakage the mon- itor is only activa- ted every) 1 dcys			

Jetta, Jetta SportWagen, Golf, Passat 2010 → Jetta SportWage

			105			32,
DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Di- agnostic Proce- dure
P241 4 O2 Sen- sor Ex- haus t Sam- ple Error Bank 1 Sen- sor 1	Sensors Front Sig- nal Range Check (Check For Sensor At Ambient	Threshold 2:     Signal voltage 2.50 – 3.06 V     Depending on gain factor.	Lambda value < 1.6 [-] O2S ceramic temp. > 715° C Fuel cut off not active Heater control closed loop SAI not active If low fuel signal then wait > 0.0 s	<ul><li>15.0 s</li><li>Multiple</li></ul>	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  3 03.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716
P243 1 AIR System Air Flow/ Pressure Sensor Circuit Rang e/ Performan ce Bank 1	Pressure Sensor Ra- tionality Check	Difference between SAI pressure and ambient pressure not (-60.0 – 60.0_ hPa	SAI done  Holy  Hol	• 0.5 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to   S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.
P243 2 AIR Sys- tem Air Flow/ Pres- sure Sen- sor Cir- cuit Low Bank 1	Air System Pressure Sensor Sig- nal Range Check	• Signal voltage < 0.5 V		0.5 s     Continuous	• 2 DCY	- Check the Secondary Air Injection Sensor 1 - G609 Refer to  ⇒ S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
P243 3 AIR System Air Flow/ Pressure Sensor Circuit High Bank 1	Air System Pressure Sensor Sig- nal Range Check	• Signal voltage > 4.5 V	ositile dune se authorise adoy Vo	O.5 s     Continuous  NKSWagen AG. Vo	• 2 DCY  Ikswagen AG does,	- Check the Secondary Air Injection Sensor 1 - G609 Refer to S3.6.25 econdary Air Injection Sensor 1 G609. Checking", page 721.
P244 0 AIR System Switc hing Valv e Stuc k Ope n Bank 1	Check After SAI	< 65.0%	ECT 5 – 108° C     IAT 5 – 100° C     Altitude < 2,700.0 m     SAI pressure sensor ready      Altitude    SAI pressure sensor ready	• 45.0 s • Once / DCY	• 2 DCY	- Check the Secondary Air Injection Solenoid Valve - N112 Refer to  ⇒ S3.6.26 econdary Air Injection Solenoid Valve N112. Checking".  - Check the Secondary
			· · · · · · · · · · · · · · · · · · ·	Deloelou	.ĐA nagswa.	Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor -V101 Refer to  S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
0 EVA P	tionality Check Dur- ing Engine	Evap pump current difference between reference measurement to idle <= 3 mA	<ul> <li>Engine temperature @ engine start &gt;= 4° C</li> <li>Difference between ECT and IAT @ engine start &lt;= 15 K</li> <li>Ambient air temperature &lt; 35; &gt; 4° C</li> <li>Altitude &lt;= 2,700 m</li> <li>Time since engine start in preceding dcy &gt;= 600.0 s</li> <li>Change in battery voltage during monitoring &lt; 1.0 V</li> <li>Engine off time &gt;= 5.0 s</li> <li>Vehicle speed 0 km/h</li> <li>Evap purge adaptation &lt; 5.0</li> </ul>	• 13.5 s • Once / DCY	• 2 DCY	- Check the Leak Detection Pump - V144 Refer to  ⇒ L3.6.18 eak Detection Pump V144, Checking (3 Pin)", page 704, or ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706, as applicable.
			• No sudden change in evap pump current (filling event) < 2; > -1 mA	<sub>KSW</sub> agen AG. Vo	kswagen AG does n	Ot guarantee or acceptantion
			Deviation of fil- tered evap pump current during reference meas- urement within range <= 1.0 mA			College Hard Hard His Mills Le
		in part or in who	Change in relative evap pump current during monitoring n.a.			specific
		orcial purposes,	Within time n.a.     (During ECM keep alive-time after ignition off, max. time) < 900.0 s			N with respection in the matter in the matte
			Airbag not acti- yated			Onin History
			(After MIL illumi- nation because of any EVAP leakage the mon-		9	A KQ MB MOO THOU MOO TO A STATE OF THE STATE



DTC / De- script ion	· ·	Malfunction Cri- teria and Thresh- old Value Jankswagen A.G. Volks	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
	sauthorisedh	1,40	itor is only activa- ted every) 1 dcys	0,		
P262 6 O2 Sensor Pum ping Cur- rent Trim Cir- cuit/ Ope n Bank 1 Sen- sor 1	Oxygen Sensors Front Open Circuit Ad- justment Voltage (IA)	• O2S signal front > 4.77 V	<ul> <li>Modeled exhaust temp. &lt; 750° C</li> <li>O2S ceramic temp. &gt; 720° C</li> <li>Fuel cut off active</li> <li>Heater control closed loop</li> <li>If low fuel signal then wait &gt; 0.0 s</li> </ul>	• 2.0 s • Multiple  Multiple	• 2 DCY	- Check the Oxygen Sensor 1 Before Catalytic Converter - GX10 Refer to  ⇒ O3.6.23 xy-gen Sensor 1 Before Catalytic Converter GX10, Checking", page 716 .
En- gine Cool-	Engine Coolant Tempera- ture Sensor Rationality Measured Engine Coolant Temp. Be- low Refer- ence Model	Range_01:  Measured engine coolant temp. not within in a range of the reference model > 11 K  Range_01:  Measured engine coolant temp. not within in a range of the reference model > 11 K	Modmax_01:     Maximum reference temperature 60° C      Demonstration of the control of the	• 4.0 s	• 2 DCY	- Check the Engine Coolant Temperature Sensor -G62 Refer to
	CAN: CAN- Bus Read- ing Back Sent Mes- sage (Pow- ertrain)	CAN mes- sage no feed- back	Time after ignition on 500.0 ms	• 250.0 ms • Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U000 2 High Spee d CAN Com mu- nica- tion Bus Per- for- man ce	CAN: CAN- Bus CAN Communi- cation Check (Power- train)	Global time out receiving no message  no message  toofised by Volkes wagen  toofised by Vol	Time after ignition on 500.0 ms  AG. Volkswagen AG does no	450.0 ms     Continuous	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to   C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.
	CAN: TCM CAN Communication With TCM With TCM CAN Communication With TCM CAN COMPANY (Separation of the Communication of the Canada Cana	Received CAN mes- sage no mes- sage	Time after ignition on 500.0 ms	• 500.0 ms • Continuous	and lability with respect to the correctness of information	- Check the CAN-Bus terminal resistance between the Transmission Control Module to the Engine/ Motor Control Module - J623 Refer to   C3.6.5 AN-Bus Terminal Resistance, Powertrain, Checking", page 678
U012	CAN <sup>®</sup> Brake	Received CAN message no message	• Time after ignition on 500.0 ms	440.0 ms     Continue     ous     ous	• 82 DCY	- Check the CAN-Bus terminal resistance. Refer to  ⇒ C3.6.4 AN-Bus Terminal Resistance. Checking", page 676.



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U014 6 Lost Com mu- nica-	CAN: Gate- way CAN Communi- cation With Gateway	Received     CAN mes-     sage no mes-     sage	Time after ignition on 500.0 ms	• 1,000.0 ms • Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to
tion With Gate way "A"	unlessauth	risad by Volkswagen AG.	Volkswagen AG does not gu	Tantee or accept		C3.6.4 AN- Bus Termi- nal Resist- ance, Checking", page 676
Com mu- nica	strument Cluster CAN Com- munication With Instru-	Received CAN mes- sage no mes- sage	Time after ignition on 500.0 ms	• 500.0 ms	• 2 DCY	<ul> <li>Check the CAN-Bus terminal resistance.</li> <li>Refer to</li> </ul>
With Instruction struction ment Pande	ment Clus- ter Module				ty with respect to the correctness of information in the	C3.6.4 AN- Bus Termi- nal Resist- ance, Checking", page 676
Clus- ter (IPC) Con- trol Mod- ule	Work of College			8		
ware In- com- pati- bility With Tran smis- sion Con- trol Mod- ule		• Received AT vehicle data TCM signal	N A OIKENSBEN AG.		• 2 DCY	- Check for software updates and TSB's. Reprogram as necessary. If none are found, replace the Transmission Control Module. Refer to appropriate repair manual.
U040 2 Inva- lid Data Re- ceiv- ed From TCM	CAN: TCM CAN Com- munication With TCM	Received data implausible message	Time after ignition on 500.0 ms	Continuous	• 2 DCY	<ul> <li>Check for software up- dates and TSB's. Re- program as necessary. If none are found, re- place the Transmis- sion Control Module. Re- fer to appro- priate repair manual.</li> </ul>



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
U041 5 Inva- lid Data Re- ceiv- ed From Anti- Lock Brak e Sys- tem (ABS ) Con- trol Mod- ule "A"	CAN: Vehicle Speed Sensor CAN Communication With Vehicle Speed Sensor  CAN: Brake Unit CAN Communi-	ta implausible	Time after ignition on 500.0 ms	<ul> <li>1,980.0 ms</li> <li>480.0 ms</li> <li>Continuous</li> <li>2,100.0 ms</li> <li>Continuous</li> <li>480.0 ms</li> <li>Continuous</li> <li>60.0 ms</li> <li>Continuous</li> </ul>	• 2 DCY	- Check the CAN-Bus terminal resistance. Refer to   C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.  - Check the vehicle speed signal. Refer to   V3.6.29 ehicle Speed Signal, Checking", page 729.
lid Data Re- ceiv- ed >	cation With Brake Unit	Ambient temperature value (initialization) 0.0 h [-]	Key on     Status ambient temperature from instrument cluster no fault     Electrical check ambient temperature sensor no fault	• Multiple	th respect to the co	- Check for software updates and TSB's. Reprogram as necessary. If none are found, replace the Body Control Module. Refer to appropriate repair manual.
3 Inva- id Data Re- ceiv- ed	CAN: In- strument Cluster CAN Com- munication With Instru- ment Clus- ter Module	• Received CAN message implausible message	Time after ignition on 500.0 ms  Time after ignition on 500.0 ms  Time after ignition of 500.0 ms			<ul> <li>Check for correct software version and VIN or update software for the IPC Module if available. If OK, replace the Instrument Cluster Control Module J285 Refer to appropriate repair manual.</li> </ul>



DTC / De- script ion	Monitor Strategy Description	Malfunction Cri- teria and Thresh- old Value	Secondary Parameters with Enable Conditions	Monitoring Length Time	MIL Illumina- tion	Component Diagnostic Procedure
trol Mod- ule	CAN: Ambient Air Temperature Sensor Communication With Instrument Cluster Module (CBTA)	Ambient temperature value (initialization) 0.0 h [-]	Key on     Status ambient temperature from instrument cluster no fault     Electrical check ambient temperature sensor no fault	• 3.0 s • Multiple		
U044 7 Inva- lid Data Re- ceiv- ed From Gate way "A"	CAN: Gate- way CAN Communi- cation With Gateway	Received da- ta implausible message	Time after ignition on 500.0 ms	• 300.0 ms • Continuous	• 2 DCY	Check the CAN-Bus terminal resistance. Refer to  C3.6.4 AN-Bus Terminal Resistance, Checking", page 676.

#### 3.5 **Transmission DTC Tables**

◆ ⇒ T3.5.1 ransmission Control Module, AQ250 09G", page 653

#### 3.5.1 Transmission Control Module, AQ250 09G

	404 NOI	KSWagen AG. VOIKSW	AQ	250 09G			
DTC GUINESS ?	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0604	Internal Control Module Random Access Memory (RAM) Error Internal Control Module Read On- ly Memo- ry (ROM) Error	RAM area check	Comparison of writing data and reading data	Writing da- ta is differ- ent from reading one	with respect to the	• 40.0 s	• 2 DCY
P0605	Internal Control Module Read On- ly Memo- ry (ROM) Error	ROM area check	Comparison of stored checksum value and calculated checksum	Two checksum values are not same	correctness of informati	• 40.0 s	• 2 DCY
P0613	TCM Processor	2nd CPU detects miscalcula- tion	Check-cal- culation of 1st CPU failed	Single re- set does so not cover problem		• XX s	• 2 DCY



			AQ	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Parameters with Enable Conditions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0614	ECM/TC M Incom- patible	CAN re- ceive data check	Detection of error signal	<ul> <li>Transmission coding is manual transmission code (0Fh)</li> <li>Or</li> <li>Max torque is not same as one in ATCU</li> </ul>	CAN bus: ACTIVE  ECU communication: ACTIVE  ECU data update: ACTIVE	• 250.0 ms	• 2 DCY
P0705	Trans- mission Range Sensor "A" Çire cuit (PRNDL Input)	A, B, C and PA signal of theck in every shift lever position.	Detection of Wrong of combina- tion of the A, B, C and PA signal	Wrong combination for more than 350.0 ms	N. O. D. J.	• 350.0 ms	• 2 DCY
Laccial purposes, in part or in whole, is not be be been been all of the beautiful or in whole, is not be been all of the beautiful or in part or in whole, is not been all of the beautiful or in part or in par	Input Tur- bine/ Speed Sensor "A" Circ	Electrical check	Detection of wrong input AD value	<ul> <li>Voltage &lt; 0.2 volt (AD value &lt; 45.0) for more than 100.0 ms</li> <li>Or</li> <li>(AD value &gt; 545.0) voltage &gt; 3.8 volt for more than 100.0 ms</li> </ul>	Input sensor:     no failure     decision for     input sensor     no pulse failure     ure	• 100.0 ms • 5.0 times	• 2 DCY
P0716	Turbine Shaft Speed Sensor "A" Cir- cuit	• No pulse check	• Comparison pulse of input revolution and output revolution	No pulse of input sensor more than 125.0 ms. The sensor more	<ul> <li>Engine speed &gt; 400 RPM</li> <li>Output sensor: ACTIVE</li> <li>Output speed &gt;= 300 RPM</li> <li>Input sensor: no during failure detection or after failure decision for input sensor electrical failure</li> </ul>	• 125.0 ms • 4.0 times	• 2 DCY



				250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0720	output Shaft Speed Sensor Circuit	Electrical check	Detection of wrong input AD value	<ul> <li>Voltage &lt; 0.2 volt (AD value &lt; 45.0) for more than 100.0 ms</li> <li>Or</li> <li>(AD value &gt; 545.0) voltage &gt; 3.8 volt for more than 100.0 ms</li> </ul>	Output sen- sor: no fail- ure decision for output sensor no pulse	• 100.0 ms • 5.0 times	• 2 DCY
P0721	Output Shaft Speed Sensor Circuit Range/ Perform- ance	No pulse check	Comparison pulse of input revolution and output revolution  and	No pulse of output sensor more than 250.0 ms  Orised by Volkswage!	<ul> <li>Engine speed: &gt; 400 RPM</li> <li>Input sensor: ACTIVE</li> <li>Calculated output speed by input speed: &gt;= 300 RPM</li> <li>Main solenoid switch: ON</li> <li>Gear condinations Engage</li> <li>Range: D,S</li> <li>Inhibitor switch: no fault</li> <li>Output sensor: no during failure detection or after failure decision for output sensor electrical failure</li> <li>Solenoid: no fault (except S2)</li> <li>Linear solenoid: no fault</li> </ul>	• 250.0 ms • 2.0 times	• 2 DCY
			LOS TO BRAILD AND BURGOS	i46;Mdoodar		R <sub>MSMON</sub> (A) No.	hithdro ithe throat

# Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool Edition 07.2022

		,xtgdyfile	AQ2	250 09G	9,	Ž.	
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Parameters with Enable Conditions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0725	Speed in- put Circuit cuit	CAN re- ceive data check	Detection of error signal		CAN bus: ACTIVE  ECU communication: ACTIVE  ECU data update: ACTIVE	• $250$ to the correctness of $inform_{\rm B}$	• 2 DCY
P0729	Gear 6 Incorrect Ratio	output and output RPM signal check. Separate error memory for each gear.	• Comparison of indicated slip and actual slip with stored values	<ul> <li>1. ABS (input revolutions – output revolutions x other gear ratio x outer gear ratio x outer gear ratio x output revolutions) for more than 1.0 s</li> <li>2. Slip differences &gt; (0.20 x current gear ratio x output revolutions) for more than 1.0 s</li> </ul>	speed > 400 RPM  Output revo- lutions > 250 RPM Shiff lever D	• \$0 s • 12.0 • times	• 2 DCY • Cu- mula- tive



			AQ2	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0731	Incorrect Ratio	Input and output RPM signal check. Sep- arate error memory for each gear.	Comparison of indicated slip and actual slip with stored values	ABS (input rev – out-put rev x other gear ratio) < (0.04 x other gear ratio x out-put rev) for more than 1.0 s	speed > 400 RPM  Output revolutions > 250 RPM  Estimated engine torque > 100.0 Nm at 1st gear > 80.0	• 1.0 s • 12.0 times	• 2 DCY • Cu- mula- tive
	7%	oised by Volkswagen A	.G. Volkswagen AG	does not guarantee	<ul><li>Shift lever D or S</li><li>Brake: OFF</li></ul>		
urposes, in part or in whole, is not.	in the state of th	prised by Volkswagen /			Slip difference of output speed and ABS difference < 10.0% (in case of ABS failure, this condition isn't activated)  Engaged gear, 1st gear		
commercial pl	,				Revolution sensor no back up condition     Model oil		
	TRANCHO BUILDOS,	Protected by copyright	-ĐA ng	овынанго Логкамад	• Mogel oil temperature ⇒ 20° C • Common parameter, common condition (see footnote ⇒ page 668)		



			AQ	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
	or in whole, is not	• Neutral condition check	Detection of slip condition  Nolkswagen AG. Volkswagen AG. Vo	• Input revolutions > output revolutions x 1st gear ratio + 400 RPM for more than 3.3 s	speed > 400 RPM  Shift lever D or S  Output revolutions <= 500 RPM  Output revolutions which <= 500 RPM calculated from ABS (In case of ABS failure, this condition isn't activated)		Cumulative but, in case of changing the shift lever position, counter = 0
	in parcommercial purposes, in pa	So Spelite To British of Stranger Stran	o Valeschad by co	. DA nagawe	• Common parameter, common condition (see footnote ⇒ page 668)	correctness of information in this	



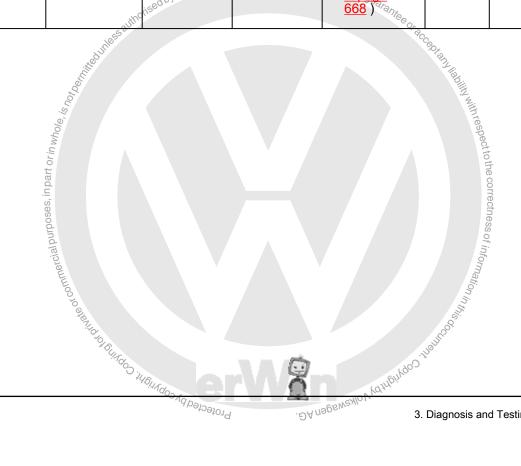
			250 09G			
OTC Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
O732 Gear 2 Incorrect Ratio	Neutral condition check	or commercial purposes, in part or in whole, is not be mile	lutions > output revolutions x 1st gear ratio + 400 RPM for more than 3.3 s	<ul> <li>Engine speed &gt; 400 RPM</li> <li>Shift lever D or S</li> <li>Output revolutions &lt;= 500 RPM</li> <li>Output revolutions which &lt;= 500 RPM calculated from ABS (In case of ABS failure, this condition isn't activated)</li> <li>L-up condition: OFF</li> <li>Input sensor, no back up condition</li> <li>Output sensor, active or back up by ABS</li> <li>Model oil temperature &gt;= 0° C</li> <li>Common parameter, common condition (see footnote ⇒ page 668)</li> </ul>	en AG does not	2 DCY     Cumulative but, in case of changing the shift lever position, counter = 0      Quarantes Oraco



		AQ:	250 09G			
DTC Fault Code De scription		Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
	Input and output RPM signal check. Separate error memory for each gear.	dicated slip and actual slip with stored values  who to be seen in part or in the seen in part or in the seen in part or in the seen in	1. ABS (input revolutions – output revolutions x other gear ratio x output revolutions) for more than 1.0 s     2. Slip differences > (0.20 x current gear ratio x output revolutions) for more than 1.0 s	speed > 400 RPM  Output revolutions > 250 RPM  Shift lever Door S  Brake: OFF  Slip difference of output speed (In case ABS valid) difference < 10.0%  Revolution sensor, no back up condition  Model oil temperature >= 0° C  Common parameter, common condition (see footnote) page 668  page 668	• 1.0 s • 12.0 times  does not guare	• 2 DCY • Cumulative

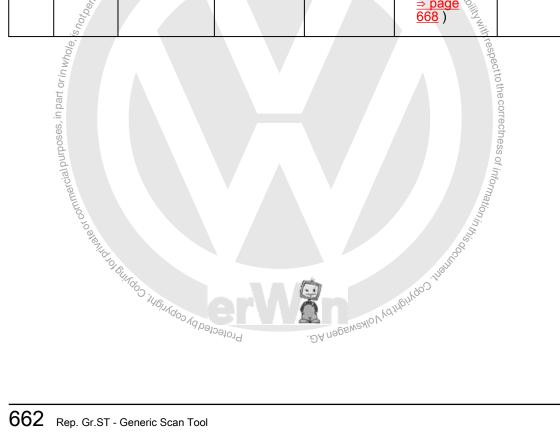


			AQ	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0733	Gear 3 Incorrect Ratio	Input and output RPM signal check. Separate error memory for each gear.   **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear in the check is a signal check. Separate error memory for each gear.**  **Teach Gear	Comparison of indicated slip and actual slip with stored values  isedby Volkswagen	1. ABS (input revolutions – output revolutions x other gear ratio) < (0.04 x other gear ratio x output revolutions) for more than 1.0 s      2. Slip differences > (0.20 x current gear ratio x output revolutions) for more than 1.0 s	speed > 400 RPM  Output revolutions > 250 RPM  Shift lever D or S  Brake: OFF  Slip difference of output speed (In case ABS valid) difference < 10.0%  Revolution sensor, no back up condition  Model oil temperature >= 0° C  Common parameter,	• 1.0 s • 12.0 times	• 2 DCY • Cu- mula- tive





			AQ2	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
	Gear 4 Incorrect Ratio	Input and output RPM signal check. Separate error memory for each gear.   separate server memory for each gear.	Comparison of indicated slip and actual slip with stored values      AG. Volkswag	1. ABS (input revolutions – output revolutions x other gear ratio) < (0.04 x other gear ratio x output revolutions) for more than 1.0 s      2. Slip differences > (0.20 x current gear ratio x output revolutions) for more than 1.0 s  Gen AG does not guar.	speed > 400 RPM  Output revolutions > 250 RPM  Shift lever D or S  Brake: OFF  Slip difference of output speed (In case ABS valid) difference < 10.0%  Revolution sensor, no	• 1.0 s • 12.0 times	• 2 DCY • Cu- mula- tive





AQ250 09G								
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Parameters with Enable Conditions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum	
P0735	Gear 5 Incorrect Ratio	Input and output RPM signal check. Separate error memory for each gear.  Input and output and signal check. Separate error memory for each gear.	• Comparison of indicated slip and actual slip with stored values		speed > 400 RPM  Output revolutions > 250 RPM Shift lever D or S Brake: OFF Slip differ-	Wydo Jirging	Y D Chned lativeness of Information in this	
P0743	Torque Convert- er Clutch Circuit Electrical	Input AD value check in every linear solenoid.	Detection of wrong input AD value	Feedback current > 1,333.0 mA (AD value > 1,000.0) for more than 100.0 ms      Feedback current < 23.0 mA (AD value < 15.0) for more than 100.0 ms	Main sole- noid switch: ON	• 100.0 ms • 5.0 times	• 2 DCY	
		Linear sole- noid feed- back cur- rent check	Comparison of target current and feedback current	• Sum of difference of two current > 20,000.0	• Linear feed- back current is > 23.0 mA (AD: 15.0) < 1,333.0 mA (AD: 1,000.0)	• 2.0 times	2 DCY     Continuously	



			AQ	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0748	Pressure Control Solenoid "A" Elec- trical	<ul> <li>Input AD value check in every lin- ear sole- noid.</li> </ul>	Detection of wrong input AD value  ABSE AUTHORISE ADDITION  A	• Feedback current > 1,333.0 mA (AD value > 1000.0) for more than 100.0 ms	• Main sole- noid switch:	• 100.0 ms • 5.0 times	• 2 DCY
		rin whole, is not be milled.	value  value  value  Compari-	• feedback current < 23 mA (AD value < 15.0) for more than 100 ms	ON		bility with respect t
		noid feed- back cur- rent check	son of tar- get current and feed- back cur- rent	ference of two cur- rent > 20,000.0 Ω	<ul> <li>Linear feed-back current is &gt; 23.0 mA (AD: 15.0) &lt; 1,333.0 mA (AD: 1,000.0)</li> </ul>	times	• Contain ously
P0753	Shift Solenoid "A" Electrical	Conduction check in ON/OFF solenoid	Comparison of the signal of solenoid monitor and solenoid driver output	Wrong output sig- nal for more than 100.0 ms		onlient Copyign	• 23 DCY
P0798	Pressure Control Solenoid "C" Elec- trical	<ul> <li>Input AD value check in every lin- ear sole- noid.</li> </ul>	Detection of wrong input AD value	• Feedback 1,333.0 mA (AD value > 1,000.0) for more than 100.0 ms	N A Olkawagen AG.	• 100.0 ms • 5.0 times	• 2 DCY
				Feedback current < 23.0 mA (AD value < 15.0) for more than 100.0 ms	Main sole- noid switch: ON		
		Linear sole- noid feed- back cur- rent check	Comparison of target current and feedback current     rent	• Sum of difference of two current > 20,000.0	<ul> <li>Linear feed-back current is &gt; 23.0 mA (AD: 15.0) &lt; 1,333.0 mA (AD: 1,000.0)</li> </ul>	• 2.0 times	2 DCY     Continuously



		AQ	250 09G			
DTC Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P0811 Excessive Clutch "A" Slippage	OFF stuck check.	Comparison of engine RPM and input RPM  • Detection  • Comparison of engine RPM and input RPM  • Detection	• Engine RPM – in- put RPM > 100 RPM for 2.0 s	Engine speed > 400 RPM     Shift lever D or S     Engine speed < 4,000 RPM     Estimated engine torque >= 0.0 Nm     Revolution sensor, no back up condition AG. Volkswage SLU target current > 1,000.0 mA     Model oil temperature >= 20° C     Common parameter, common condition (see footnote ⇒ page 668)     CAN bus: ACTIVE     Time: 500.0 ms after ignition: ON	• 2.0 s • 6.0 times	• 2 DCY • Continuously
P0864 TCM Commu- nication Circuit Range/ Perform- ance	CAN communication check	Detection of communication error (all frames which are entered in ATCU)	communi- cation for more than 50.0 ms	CAN bus: ACTIVE Time: 500.0 ms after ignition: ON  Can bus: ACTIVE  Time: 500.0	• 500.0 ms (In case of re peat rate is over 50.0 ms, 10.0 times value of repeat rate is over seat rate rate rate rate rate rate rate r	• 2 DCY



			AQ	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Parameters with Enable Condi-Volume	Monitor- ing Time	Frequen- cy of checks, MIL Illum
			Detection of communication error (one frame which is entered in ATCU)      ATCU      To be the communication of communication error (one frame which is entered in ATCU)      To be the ction of communication of communication error (one frame which is entered in ATCU)      To be the ction of communication of communication error (one frame which is entered in ATCU)      To be the ction of communication error (one frame which is entered in ATCU)      To be the ction of communication error (one frame which is entered in ATCU)      To be the ction of communication error (one frame which is entered in ATCU)      To be the ction of communication error (one frame which is entered in ATCU)      To be the ction of communication error (one frame which is entered in ATCU)      To be the ction of communication error (one frame which is entered in ATCU)      To be the ction of ction error (one frame which is entered in ATCU)      To be the ction of ction of ction error (one frame which is entered in ATCU)      To be the ction of ction error (one frame which is entered in ATCU)      To be the ction of ction error (one frame which is entered in ATCU)      To be the ction of ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)      To be the ction error (one frame which is entered in ATCU)	• ECU no communication for more than 50.0 ms (In case of repeat rate is over 25.0 ms, double value of repeat rate is used)	• Time: 500.0	• 1,000.0 ms (In case of repeat rate is over 50.0 ms, 20.0 times value of repeat rate is used)	""
		CAN re- ceive data check	ECU signal data freeze (data counter (ID488,		CAN bus: ACTIVE  CAN data repeat rate: the space of time between two received messages has not exceeded double the transmission cycle time  CAN bus:	• No up-date in five mes-sage	gewexiov yangi
		CAN communication check	Detection of commu- nication error	No acknowledge condition for more than 300.0 ms	CAN bus: ACTIVE     Time: 500.0 ms after ignition: ON	• 300.0 ms	
P0865	TCM Commu- nication Circuit Low	CAN com- munication check	Detection of commu- nication error	CAN BUS off condi- tion for more than 250.0 ms	Time 500.0 ms after ignition: ON	• 250.0 ms	• 2 DCY
P2122	Throttle/ Pedal Position Sensor/ Switch "D" Cir- cuit Low	CAN communication check	Detection of error signal		CAN bus: ACTIVE  ECU communication: ACTIVE  ECU data update: ACTIVE	• 250.0 ms	• 2 DCY



			AQ	250 09G			
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum
P2637	Torque Manage- ment Feed- back Sig- nal "A"	CAN re- ceive data check for "signal in- valid"	Detection of error signal (0xFF)  Oxfr  Oxf	Volkswagen AG. Vo	CAN bus: ACTIVE  ECU com- kswamunication: ACTIVE snot  ECU data update: AC- TIVE	• 250.0 ms	• 2 DCY
P2716	Pressure Control Solenoid "D" Elec- trical	value check in every lin- ear sole	Detection of wrong input AD value	• Feedback current > 1,333.0 mA (AD value > 1,000.0) for more than 100.0 ms		• 100.0 ms • 5 times	2 CY DNN with respect to the corre
		uoid.		• Feedback current < 23.0 mA (AD value < 15.0) for more than 100.0 ms	Main sole- noid switch: ON	• 100.0 ms • 5.0 times	octness of information in
		Linear soles noid feed-back current check	Comparison of target current and feedback current rent	• Sum of difference of two current > 20,000.0	back current is > 23.0 mA (AD: 15.0) < 1,333.0 mA (AD: 1000.0)	• 2.0 times	DCY
P2725	Pressure Control Solenoid "E" Elec- trical	Input AD     value check     in every lin- ear sole- noid.	Detection of wrong input AD value	Feedback current > 1,333.0 mA (AD value > 1,000.0) for more than 100.0 ms	HOLKSYGEN AG.	• 100.0 ms • 5.0 times	• 2 DCY
				Feedback current < 23.0 mA (AD value < 15.0) for more than 100.0 ms	Main sole- noid switch: ON	• 100.0 ms • 5.0 times	• 2 DCY
		Linear sole- noid feed- back cur- rent check	Comparison of target current and feedback current     rent	• Sum of difference of two current > 20,000.0	<ul> <li>Linear feed-back current is &gt; 23.0 mA (AD: 15.0) &lt; 1,333.0 mA (AD: 1,000.0)</li> </ul>	• 2.0 times	2 DCY     Continuously



			AQ	250 09G				]
DTC	Fault Code De- scription	Monitor Strat- egy Descrip- tion	Malfunction Criteria	Threshold Value	Secondary Pa- rameters with Enable Condi- tions	Monitor- ing Time Length	Frequen- cy of checks, MIL Illum	
P2734	Pressure Control Solenoid "F" Elec- trical	Input AD value check in every linear solenoid.	Detection of wrong input AD value	Feedback current > 1,333.0 mA (AD value > 1,000) for more than 100.0 ms		• 100.0 ms • 5.0 times	• 2 DCY	
				• Feedback current < 23.0 mA (AD value < 15.0) for more than 100.0 ms	Main sole- noid switch: ON	• 100.0 ms • 5.0 times	• 2 DCY	
		Linear sole- noid feed- back cur- rent check	Comparison of target current and feedback current	Sum of difference of two current > 20,000,000 Ω	back current∘ is≫ 23.0 mA	• 2.0 ksw <b>times</b> G		Tee Or accept
<ul> <li>◆ Gea</li> <li>◆ S1 s</li> <li>◆ Line</li> <li>◆ Inhib</li> <li>◆ CAN</li> <li>◆ ECL</li> <li>◆ Estir</li> <li>◆ Engi</li> <li>◆ Acce</li> </ul>	n solenoid solenoid solenoid No ar solenoid bitor switch I communicul data upda mated engirine speed relerator pedicine speed relevator pedicine s	engaged fault no fault no fault cation no fault ate no fault ne torque no fault	It of fault or in whole, is not	rent > 20,000.0 col Ω Ω Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q				toe of accediantility with respect.
◆ RAM	A no fault A no fault ety process		duros	200 INOTA	Protected by cop	-ĐA nə	PEWENIOV VOIME	nyhdo 3
3.6 ♦ ⇒ A3	_	nostic Proce ator Pedal Modu	ile GX2, Check	ing", page				
<u>670</u>								
▼ ⇒ U. page	<u>3.6.∠ amsn</u> <u>e 672</u>	<u>aft Adjustment V</u>	aive i inzub, C	necking ,				

#### Footnote:

- Main solenoid switch ON
- Gear condition engaged
- S1 solenoid No fault
- Linear solenoid no fault
- Inhibitor switch no fault
- CAN communication no fault
- ECU data update no fault
- Estimated engine torque no fault
- Engine speed no fault
- Accelerator pedal no fault
- T/M coding and MDI max info no fault
- ROM no fault
- RAM no fault
- Safety processor no fault

#### **Diagnostic Procedures** 3.6

- ⇒ A3.6.1 ccelerator Pedal Module GX2, Checking", page
- ⇒ C3.6.2 amshaft Adjustment Valve 1 N205, Checking", page 672
- ⇒ C3.6.3 amshaft Position Sensor G40, Checking", page









- ⇒ C3.6.4 AN-Bus Terminal Resistance, Checking", page <u>676</u>
- ⇒ C3.6.5 AN-Bus Terminal Resistance, Powertrain, Checking", page 678
- ⇒ C3.6.6 enter Oxygen Sensor for Bank 1 Catalytic Converter G465, Checking (CBUA)", page 680
- ⇒ E3.6.7 ngine Coolant Temperature Sensor G62, Checking", page 683
- ⇒ E3.6.8 ngine Coolant Temperature Sensor on Radiator Outlet G83, Checking", page 685
- ⇒ E3.6.9 ngine Speed Sensor G28, Checking", page 686
- ⇒ E3.6.10 VAP Canister Purge Regulator Valve 1 N80, Checking", page 688
- ⇒ F3.6.11 uel Delivery Unit GX1 / Fuel Pump Relay J17, Checking", page 690
- ⇒ F3.6.12 uel Delivery Unit GX1 / Fuel Supply Relay J643, Checking", page 692
- ⇒ F3.6.13 uel Injectors, Checking", page 694
- ⇒ I3.6.14 gnition Coils With Power Output Stage, Checking", page 696
- ♦ ⇒ I3.6.15 ntake Manifold Sensor GX9, Checking", page 698
- ⇒ K3.6.16 nock Sensor 1 G61, Checking", page 700
- ♦ ⇒ K3.6.17 nock Sensor 2 G664 Checking apage 702
- ⇒ K3.6.17 nock Sensul ∠ Sensu
- ⇒ L3.6.19 eak Detection Pump V144, Checking (4 Pin)", page 706
- ⇒ M3.6.20 otronic Engine Control Module Power Supply Relay 1271, Checking", page 709
- ⇒ O3.6.21 utside Air Temperature Sensor G17, Checking", <u>page 711</u>
- ⇒ O3.6.22 xygen Sensor 1 After Catalytic Converter GX7, Checking", page 713
- high the correctness of information in this occurrence in the correctness of information in this occurrence in the correctness of information in this occurrence in the correctness of information in the correctn ◆ ⇒ O3.6.23 xygen Sensor 1 Before Catalytic Converter GX10, Checking", page 716
- ⇒ S3.6.24 econdary Air Injection Pump Relay J299 / Secondary Air Injection Pump Motor V101, Checking", page 719
- S3.6.25 econdary Air Injection Sensor 1 G609, Checking", page 721
- ⇒S3.6.26 econdary Air Injection Solenoid Valve N112, Checking", page 723
- ⇒ T3.6.27 hree Way Catalytic Converter (TWC), Checking", page 725
- ⇒ T3.6.28 hrottle Valve Control Module GX3 / J338, Check ing", page 726 ⇒ V3.6.29 ehicle Speed Signal, Checking page 729 KQHRING



#### 3.6.1 Accelerator Pedal Module - GX2-, Checking

#### **General Description**

The Accelerator Pedal Position Sensor -G79- and the Accelerator Pedal Position Sensor 2 -G185- are combined in one component and integrated into the Accelerator Pedal Module -GX2-. They are used to detect the position of the accelerator pedal throughout the entire adjustment range. The Engine/Motor Control Module - J623- detects the driver's request from these signals and uses them to calculate the injection quantity and EPC Throttle valve operation.

The Accelerator Pedal Module - GX2- contains the following components:

- Accelerator Pedal Position Sensor -G79-.
- Accelerator Pedal Position Sensor 2 -G185-.

The Accelerator Pedal Module - GX2- components cannot be serviced separately, and they must be serviced as a unit.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- an AG does not guarantee or acceptante. Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: <u>⇒ P1.1 recautions</u>", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions" page 4

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 671 .</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
	Protected by the property of the protection of t	- DA nogewealo V dingingo O inahuda lain.
670	Rep. Gr.ST - Generic Scan Tool	



Step		Procedure		Result / Action to Take
2	•	IGNITION: OFF.	<b>-</b>	YES: CONDITION: May be intermittent.
	•	CONNECT: Scan Tool.	`	·
	•	IGNITION: ON.	•	PERFORM: Visual Inspection of wiring and component.
	•	CHECK: Throttle valve position closed:	•	CHECK: Wiring for open, high resistance,
	•	SPECIFIED VALUE: 3 – 25%.		short or harness connector for damage, corrosion, loose or broken terminals.
	•	DEPRESS: Accelerator pedal slowly to WOT while observing the percentage display. The percentage display must increase uniformly.		REPAIR: Faulty wiring or connector.  GO TO: Step 6 ⇒ page 672.
		CHECK: Throttle valve position at WOT:	•	NO:
	•	SPECIFIED VALUE: 84 – 99%.	•	GO TO: Step 3 <u>⇒ page 671</u> .
	•	IGNITION: OFF.		
	_	Was Value obtained?		
3	•	DISCONNECT: Accelerator Pedal Module - GX2- harness connector.	<b>-</b>	YES: GO TO: Step 4 <del>⇒ page 671</del> .
	•	IGNITION: ON.	-	NO:
	•	CHECK: Accelerator Pedal Module - GX2-harness connector terminals 1 to 5 and 2 to 3 for voltage.  IGNITION: OFF.  SPECIFIED VALUE: About 5.0 V.  Were Values obtained?	ksw	GO TO: Step 5 <del>⇒ page 672</del> .
	•	IGNITION: OFF.		id does not gue
	•	SPECIFIED VALUE: About 5.0 V.		adrantee o
	_	Were Values obtained?		Teccep.
4	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual. CHECK: Accelerator Pedal Module - GX2-harness connector terminal 4 to the Engine/Motor Control Module - J623- harness connector 194 / 83 for resistance. CHECK: Accelerator Pedal Module - GX2-harness connector terminal 6 to the Engine/Motor Control Module - J623- harness connector T94 / 61 for resistance. SPECIFIED VALUE: $0.5~\Omega~(\pm~0.3~\Omega)$ . Were Values obtained?	* *	YES: REPLACE: Accelerator Pedal Module - GX2 Refer to appropriate repair manual.  GO TO: Step 6 ⇒ page 672.  NO: PERFORM: Visual Inspection of wiring and component.  CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.  REPAIR: Faulty wiring or connector.  GO TO: Step 6 ⇒ page 672.
		Protected by Copyright Copyright of the Market of the Copyright of the Cop		DA 199 WALTHOUTHOUTH ON THE WAGGEN AG.



Step		Procedure	Result / Action to Take
5		EMOVE: Engine/Motor Control Module - 623 Refer to appropriate repair manual.	<ul> <li>YES:</li> <li>GO TO: Step 6 ⇒ page 672 .</li> </ul>
	ha ai	HECK: Accelerator Pedal Module - GX2- arness connector terminal 1 to the En- ine/Motor Control Module -J623- harness onnector T94 / 81 for resistance.	<ul> <li>NO:</li> <li>◆ PERFORM: Visual Inspection of wiring and component.</li> <li>◆ CHECK: Wiring for open, high resistance,</li> </ul>
	ha gi	HECK: Accelerator Pedal Module - GX2- arness connector terminal 2 to the En- ine/Motor Control Module -J623- harness onnector T94 / 82 for resistance.	short or harness connector for damage, corrosion, loose or broken terminals.  • REPAIR: Faulty wiring or connector.
	ha gi	HECK: Accelerator Pedal Module - GX2- arness connector terminal 3 to the En- ine/Motor Control Module -J623- harness onnector T94 / 17 for resistance.	◆ GO TO: Step 6 <del>⇒ page 672</del> .
	ha gi	HECK: Accelerator Pedal Module - GX2- arness connector terminal 5 to the En- ine/Motor Control Module -J623- harness onnector T94 / 11 for resistance.	
	ŀ s	PECIFIED VALUE: $0.5 \Omega \ (\pm \ 0.3 \ \Omega)$ .	
	- v	Vere Values obtained?	an AG. Volkswagen 40.
6	• Fi	inal Procedure	- YES: Nage - YES
		erform a road test to verify repair.  loes the original DTC return?	harness connector for any damaged, pushed- out pins.
		dunio	♦ REPAIR: As necessary.
			♦ If all electrical connections are OK:
		is not	♦ REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
		'in whole	<ul> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.</li> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.</li> <li>Return vehicle to Customer.</li> </ul>
		n part or	◆ Repair is complete. Generate Readiness Code. Refer to <u>⇒ C3.2 ode</u> ", page 15.
		i, 'ses'	◆ Return vehicle to Customer.
		Perform a road test to verify repair.  Poes the original DTC return?	<ul> <li>Return vehicle to Customer.</li> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> <li>If no DTC's return, the repair is complete.</li> <li>Return vehicle to customer.</li> </ul>
		mme	♦ If no DTC's return, the repair is complete.
		00000	♦ Return vehicle to customer.
	I	That is a second	
		10 dillis	illent.
3.6.2		Camshaft Adjustment Valve 1 No.	205-, Olyangenestor Maingingo, DAnagewestor Waingingo,
Gener	al Des	scription	Protected by
		aft's task is to operate the valves at the right ti	ime

## Camshaft Adjustment Valve 12N205-, 3.6.2 Protected by copyrigi Checking

#### **General Description**

The camshaft's task is to operate the valves at the right time and in the right order to control the charge cycle. Camshaft adjustment using the Camshaft Adjustment Valve 1 -N205- varies the opening times of the valves to suit all operating conditions. This ensures ideal charge cycles within a wide range of engine speeds and loads. Fuel consumption and pollutant emissions are reduced, torque and smoothness increased. In engines with a double overhead camshaft the size and positioning of the valve opening overlap can be influenced, enhancing characteristics in full-load and part-load operation. In continuous





camshaft adjustment, the adjustment is infinitely variable within specific parameters.

#### Special tools and workshop equipment required

- ◆ Multimeter.
- Wiring Diagram.
- ♦ Scan Tool.

#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: W1.2 orking Conditions", Jrkn. JAG does not guaranto. Test Procedure

Step		Procedure	100	Result / Action to Take
1 1,0/6,0/10/10/10/10/10/10/10/10/10/10/10/10/10		PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14 .  Was Complaint verified?	- + - +	YES: GO TO: Step 2 ⇒ page 673 .  NO: GATHER more information from customer about the complaint.
2 3 Salumon Sa		IGNITION: OFF. DISCONNECT: Camshaft Adjustment Valve 1 -N205- harness connector.  CHECK: Camshaft Adjustment Valve 1 - N205- component connector terminals 1 to 2 for resistance.  SPECIFIED VALUE: $5 - 20 \Omega$ (+/- $3 \Omega$ @ approx. $20^{\circ}$ C).  Was Value obtained?	- * - *	YES: GO TO: Step 3 ⇒ page 673.  NO: REPLACE: Camshaft Adjustment Valve 1 - N205 Refer to appropriate repair manual.  GO TO: Step 5 ⇒ page 674.
30,000	•	IGNITION: ON.  For all 1K2, 5K1, A32, (and AJ5 from July 2010): CHECK: Camshaft Adjustment Valve 1-N205- harness connector terminal 1 to ground for voltage.  For 162 (from April 2010): CHECK: Camshaft Adjustment Valve 1-N205- harness connector terminal 2 to ground for voltage.  IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.  Was Value obtained?	◆   Girk	YES: GO TO: Step 4 ⇒ page 674.  NO: PERFORM: Visual Inspection of wiring and component.  CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.  REPAIR: Faulty wiring or connector.  GO TO: Step 5 ⇒ page 674.



Step	Procedure	Result / Action to Take
4	<ul> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>For all 1K2, 5K1, A32, (and AJ5 from July 2010): CHECK: Camshaft Adjustment Valve 1 -N205- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T60 / 1 for resistance.</li> </ul>	YES:     TIP: The Camshaft Adjustment Valve 1 - N205- may fail under loaded operation; please swap a known good Camshaft Adjustment Valve 1 -N205- prior to continuing to the next step.     GO TO: Step 5 ⇒ page 674.
	<ul> <li>For 162 (from April 2010): CHECK: Camshaft Adjustment Valve 1 -N205- harness connector terminal 1 to the Engine/Motor Control Module -J623- harness connector T60 / 1 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> </ul>	<ul> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> </ul>
5	Final Procedure     Perform a road test to verify repair.      Does the original DTC return?	<ul> <li>YES:</li> <li>CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.</li> <li>REPAIR: As necessary.</li> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module -J623 Refer to appropriate repair manual.</li> <li>Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 - Erase DTC Memory", page 22.</li> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.</li> <li>Return vehicle to Customer.</li> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> <li>If no DTC's return, the repair is complete.</li> <li>Return vehicle to customer.</li> </ul>
3.6.3 General	# Dlingo	
- حاما	the signal from the Comphett Desition Conser CA	0. 46.5

#### Camshaft Position Sensor - G40-3.6.3 Protectedby Checking



#### **General Description**

Using the signal from the Camshaft Position Sensor -G40-, the precise position of the camshaft relative to the crankshaft is determined very quickly when the engine is started. Used in combination with the signal from the Engine Speed Sensor -G28-, the signal from the Camshaft Position Sensor -G40- allows the Engine/Motor Control Module -J623- to detect which cylinder is at TDC. The fuel can be injected into the corresponding cylinder and ignited.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.



## Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- purposes, in part or in whole Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
  - Observe all safety precautions: ⇒ P1.1 recautions", page 2.
  - View clean working conditions: ⇒ W1.2 orking Conditions", page 4.

PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck".  Page 14.  - Was Complaint verified?  DISCONNECT: Camshaft Position Sensor - G40- harness connector terminals 1 to 3 for voltage.  IGNITION: OFF.  PERFORM: Preliminary Check to verify the customers complaint. GO TO: Step 2 ⇒ page 675.  NO:  GATHER more information from custom about the complaint.  - YES: GO TO: Step 3 ⇒ page 675.  NO: GO TO: Step 4 ⇒ page 676.  NO: GO TO: Step 4 ⇒ page 676.  PYES: GO TO: Step 3 ⇒ page 675.  NO: GO TO: Step 4 ⇒ page 676.  NO: GO TO: Step 5 ⇒ page 676.  PERFORM: Visual Inspection of wirin component.  PERFORM: Visual Inspection of wirin component.  CHECK: Wiring for open, high resista	Step	Procedure	Result / Action to Take
Page 14 .  - Was Complaint verified?  • IGNITION: OFF • DISCONNECT: Camshaft Position Sensor - G40- harness connector.  • IGNITION: ON.  • CHECK: Camshaft Position Sensor -G40- harness connector terminals 1 to 3 for voltage.  • IGNITION: OFF.  • SPECIFIED VALUE: About 5.0 V.  - Was Value obtained?  3 • REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  • CHECK: Camshaft Position Sensor -G40- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.  • SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).  - Was Value obtained?  • CHECK: Wiring for open, high resistas short or harness connector for damage.	· ·		
- Was Complaint verified?  • IGNITION: OFF • DISCONNECT: Camshaft Position Sensor - G40- harness connector.  • IGNITION: ON.  • CHECK: Camshaft Position Sensor -G40- harness connector terminals 1 to 3 for voltage.  • IGNITION: OFF.  • SPECIFIED VALUE: About 5.0 V.  — Was Value obtained?  3 • REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  • CHECK: Camshaft Position Sensor -G40- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.  • SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).  — Was Value obtained?  • CHECK: Wiring for open, high resistas short or harness connector for damage.	DIENIO	customers complaint. Refer to <u>⇒ C3.1 heck",</u>	◆ GO TO: Step 2 <u>⇒ page 675</u> .
<ul> <li>IGNITION: OFF</li> <li>DISCONNECT: Camshaft Position Sensor - G40- harness connector.</li> <li>IGNITION: ON.</li> <li>CHECK: Camshaft Position Sensor -G40- harness connector terminals 1 to 3 for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: About 5.0 V.</li> <li>Was Value obtained?</li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>YES:         <ul> <li>GO TO: Step 3 ⇒ page 676</li> <li>NO:</li> <li>GO TO: Step 4 ⇒ page 676</li> <li>REPLACE: Camshaft Position Sensor Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 676</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wirin component.</li> </ul> </li> <li>CHECK: Wiring for open, high resistation of harness connector for damage.</li> </ul>		14646	◆ GATHER more information from customer
<ul> <li>BISCONNECT: Carrishalt Position Sensor - G40- harness connector.</li> <li>IGNITION: ON.</li> <li>CHECK: Camshaft Position Sensor -G40- harness connector terminals 1 to 3 for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: About 5.0 V.         <ul> <li>Was Value obtained?</li> </ul> </li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>CHECK: Wiring for open, high resistance short or harness connector for damage short or har</li></ul>	2	• IGNITION: OFF	
<ul> <li>IGNITION: ON.</li> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminals 1 to 3 for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: About 5.0 V.</li> <li>Was Value obtained?</li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>CHECK: Wiring for open, high resistat short or harness connector for damage.</li> </ul>		DISCONNECT: Camshalt Position Sensor -	- NO:
<ul> <li>harness connector terminals 1 to 3 for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: About 5.0 V.</li> <li>Was Value obtained?</li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>CHECK: Wiring for open, high resistat short or harness connector for damage</li> </ul>		• IGNITION: ON.	♦ GO TO: Step 4 <u>⇒ page 6/6</u> .
<ul> <li>SPECIFIED VALUE: About 5.0 V.         <ul> <li>Was Value obtained?</li> </ul> </li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>YES:         <ul> <li>REPLACE: Camshaft Position Sensor Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 676.</li> <li>NO:</li></ul></li></ul>		harness connector terminals 1 to 3 for volt-	
<ul> <li>Was Value obtained?</li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>YES:         <ul> <li>REPLACE: Camshaft Position Sensor Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 676 .</li> <li>NO:</li></ul></li></ul>		IGNITION: OFF.	
<ul> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>YES:         <ul> <li>REPLACE: Camshaft Position Sensor Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 676.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring component.</li> </ul> </li> <li>CHECK: Wiring for open, high resistat short or harness connector for damage</li> </ul>		<ul> <li>SPECIFIED VALUE: About 5.0 V.</li> </ul>	
<ul> <li>J623 Refer to appropriate repair manual.</li> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>REPLACE: Camshaft Position Senso Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 676 .</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring component.</li> <li>CHECK: Wiring for open, high resistance short or harness connector for damage.</li> </ul>		– Was Value obtained?	
<ul> <li>CHECK: Camshaft Position Sensor -G40-harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>GO TO: Step 5 ⇒ page 676 .</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring component.</li> <li>CHECK: Wiring for open, high resistation short or harness connector for damage.</li> </ul>	3		♦ REPLACE: Camshaft Position Sensor -G40
<ul> <li>connector T60 / 6 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>CHECK: Wiring for open, high resistation short or harness connector for damage.</li> </ul>		harness connector terminal 2 to the En-	
<ul> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>CHECK: Wiring for open, high resista short or harness connector for damage</li> </ul>		connector T60 / 6 for resistance.	
short or harness connector for damag		• SPECIFIED VALUE: $0.5~\Omega~(\pm~0.3~\Omega)$ .	
		– Was Value obtained?	♦ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
◆ REPAIR: Faulty wiring or connector.			◆ REPAIR: Faulty wiring or connector.
◆ GO TO: Step 5 <del>⇒ page 676</del> .			◆ GO TO: Step 5 <u>⇒ page 676</u> .

#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Step		Procedure		Result / Action to Take
4	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	<b>-</b>	YES: GO TO: Step 5 <u>⇒ page 676</u> .
	•	CHECK: Camshaft Position Sensor -G40- harness connector terminal 1 to the En- gine/Motor Control Module - J623- harness connector T60 / 44 for resistance.		NO: PERFORM: Visual Inspection of wiring and component.
		CHECK: Camshaft Position Sensor -G40- harness connector terminal 3 to the En- gine/Motor Control Module - J623- harness	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
		connector T60 / 52 for resistance.	•	REPAIR: Faulty wiring or connector.
	•	SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω). Volkswager	♦ 1Ac	GO TO: Step 5 <del>⇒ page 676</del> .
	<u> -</u>	Were Values obtained 3 Volkswagen For		GO TO: Step 5 <u>⇒ page 676</u> .
5	•	Final Procedure	_	YES: CHECK: Engine/Motor Control Module -J623-
	•	Perform a road test to verify repair.	ľ	harness connector for any damaged, pushed-
	-	Does the original DTC return?		out pins.
		0000	•	REPAIR: As necessary.  If all electrical connections are OK:
		9, 18, 11	<b>*</b>	REPLACE: Engine/Motor Control Module -
		Whol		J623 Refer to appropriate repair manual.
		part or in	•	Clear the DTC's. Refer to 3.3.4 ode 04 – Erase DTC Memory", page 22.
		in sees, in the se	•	Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode page 15.
		purpo	<b>*</b>	Return vehicle to Customer.
		or part or in whole, is not on the second of	•	NO: Perform the diagnostic procedure for any DTC's.
		56	•	If no DTC's return, the repair is complete.
		*ALA	•	Return vehicle to customer.
I	ı	0,		illi

## .DA nageweaho V tulngingo .in 3.6.4 CAN-Bus Terminal Resistance, Check-Protected ing

## **General Description**

The Engine/Motor Control Module -J623- communicates with all databus capable control modules via a CAN databus.

These databus capable control modules are connected via two data bus wires which are twisted together (CAN\_High and CAN\_Low), and exchange information (messages). Missing information on the databus (CAN-bus) is recognized as a malfunction and may be stored by the Engine/Motor Control Module -J623- and the other control modules connected to the CAN-bus.

Trouble-free operation of the CAN-bus requires that it have a terminal resistance. This central terminal resistor is located in the Engine/Motor Control Module -J623-.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.



#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: <u>⇒ P1.1 recautions</u>", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4

A DEDECORM Dullistan Object to 18 (for 1976)
<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 677.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Data Bus On Board Diagnostic Interface -J533- harness, connector gen Ago component.</li> <li>The Engine/Motor Control Module J623-must remain connected for the following step.</li> <li>For all except 162: CHECK: Data Bus On Board Diagnostic Interface -J533- harness connector terminals 6 to 16 for resistance.</li> <li>For 162 only: CHECK: Data Bus On Board Diagnostic Interface -J533- harness connector terminals 18 to 19 for resistance.</li> <li>SPECIFIED VALUE: 60 − 72 Ω (@ approx.</li> <li>Was Value obtained?</li> </ul>

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Step		Procedure		Result / Action to Take	
3	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  For all except 162: CHECK: Data Bus On	- ◆	YES: REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	
		Board Diagnostic Interface -J533- harness connector terminal 6 to the Engine/Motor Control Module - J623- harness connector T94 / 67 for resistance.	* - *	GO TO: Step 4 <u>⇒ page 678</u> .  NO: PERFORM: Visual Inspection of wiring and component.	
	•	For all except 162: CHECK: Data Bus On Board Diagnostic Interface -J533- harness connector terminal 16 to the Engine/Motor Control Module - J623- harness connector T94 / 68 for resistance.	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.	
	•	For 162 only: CHECK: Data Bus On Board Diagnostic Interface -J533- harness connector terminal 18 to the Engine/Motor Control Module - J623- harness connector T94 / 67 for resistance.	<b>*</b>	REPAIR: Faulty wiring or connector.  GO TO: Step 4 ⇒ page 678.	
	•	For 162 only: CHECK: Data Bus On Board Diagnostic Interface -J533- harness connector terminal 19 to the Engine/Motor Control Module - J623- harness connector T94 / 68 for resistance.			
	•	SPECIFIED VALUE: 0.5 $\Omega$ (± 0.3 $\Omega$ ).			
4	-	Were Values obtained? Final Procedure		YES:	
4		Perform a road test to verify repair.	<b>♦</b>	CHECK: Data Bus On Board Diagnostic In-	
	_	Does the original DTC return?		CHECK: Data Bus On Board Diagnostic Interface -J533- harness connector for any damaged, pushed-out pins and does not guarantee REPAIR: As necessary.	
		Boco the original BTO retain.	<b>*</b>	REPAIR: As necessary.	
			<b>♦</b> ;	off all electrical connections are OK:	
			\$	REPLACE: Data Bus On Board Diagnostic Interface -J533 Refer to appropriate repair manual.	RCCROPE ATL
		is not be,	•	Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22 .	Ollitywith
		n whole,	<b>*</b>	Repair is complete. Generate Readiness Code. Refer to <u>⇒ C3.2 ode", page 15</u> .	respect
		ırt ori	•	Return vehicle to Customer.	tothe
		ommercial purposes, in part or in whole, is not bermitted	<b>→</b>	NO: Perform the diagnostic procedure for any DTC's.	correctne
		purp	<b>*</b>	If no DTC's return, the repair is complete.	SSOf
		herdal	•	Return vehicle to customer.	nform
	<u> </u>	of comp			ationir
3.6.5		CAN-Bus Terminal Resistance, P	ΩM	ver-	this or
		train, Checking			Burgo
Gener	al [	train, Checking  Description	100	(40'	.%
Γhe Ει databu	ngii Is d	Description ne/Motor Control Module -J623- communicates capable control modules via a CAN databus.	wi	th all 600 10 100 100 100 100 100 100 100 100	
These wo da	da ta	ntabus capable control modules are connected values wires which are twisted together (CAN_High Low), and exchange information (messages). I	ria h		
678	R	tep. Gr.ST - Generic Scan Tool			_
-	•				

#### CAN-Bus Terminal Resistance, Power-3.6.5 train, Checking





ing information on the databus (CAN-bus) is recognized as a malfunction and may be stored by the Engine/Motor Control Module -J623- and the other control modules connected to the CAN-bus.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.

#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", <u>page 4</u> .

	ous.	to the
termin	e-free operation of the CAN-bus requires that it ha al resistance. This central terminal resistor is locat gine/Motor Control Module -J623	ve a ed in
Specia	al tools and workshop equipment required	
♦ Mu	Itimeter.	
♦ Wir	ring Diagram.	Nagen AG do
Test re	equirements odby Volkswas	uoes not guar
• Fus	ses OK.	Adnie Or
• Bat	ttery voltage OK.	ACC DA
• Sw	itch OFF all electrical and electronic accessories.	Fed Line
	hicles with automatic transmission, ensure the sele er position is in "P".	ector
<ul> <li>Vel pos</li> </ul>	hicles with manual transmission, ensure the shifter sition is in "N" with the parking brake applied.	lever
• Ob:	serve all safety precautions: ⇒ P1.1 recautions", p	age 2 .
pag	ew clean working conditions: ⇒ W1.2 orking	vagen AG does not guarantee of according to the correctness rector  age 2.  cons".  Result / Action to Take
		86
Step	Procedure Procedure	Result / Action to Take
Step 1	Procedure  • PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.  - Was Complaint verified?	Result / Action to Take  - YES:  ◆ GO TO: Step 2 ⇒ page 679  - NO:  ◆ GATHER more information from customer about the complaint.
	• PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 679</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 679</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> <li>YES:</li> <li>CONDITION: May be intermittent.</li> <li>PERFORM: Visual Inspection of wiring and component.</li> </ul>
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> <li>IGNITION: OFF.</li> <li>The Engine/Motor Control Module -J623-must remain connected for the following step. The central terminal resistor is located in the</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 679</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> <li>YES:</li> <li>CONDITION: May be intermittent.</li> <li>PERFORM: Visual Inspection of wiring and</li> </ul>
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14</li> <li>Was Complaint verified?</li> <li>IGNITION: OFF.</li> <li>The Engine/Motor Control Module -J623-must remain connected for the following step. The central terminal resistor is located in the Engine/Motor Control Module -J623</li> <li>REMOVE: Transmission Control Module. Re-</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 679</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> <li>YES:</li> <li>CONDITION: May be intermittent.</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, cor-</li> </ul>
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14</li> <li>Was Complaint verified?</li> <li>IGNITION: OFF.</li> <li>The Engine/Motor Control Module -J623-must remain connected for the following step. The central terminal resistor is located in the Engine/Motor Control Module -J623</li> <li>REMOVE: Transmission Control Module. Refer to appropriate repair manual.</li> <li>CHECK: Transmission Control Module harness connector terminals 34 to 46 for resist-</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 679</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> <li>YES:</li> <li>CONDITION: May be intermittent.</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> </ul>

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Step	Procedure		Result / Action to Take	
3	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  CHECK: CAN bus circuit between the Trans-		YES: REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
		mission Control Module harness connector	•	GO TO: Step 4 <del>⇒ page 680</del> .
		terminal 34 and the Engine/Motor Control Module -J623- harness connector T94 / 67 for resistance.	<b>-</b>	NO: PERFORM: Visual Inspection of wiring and component.
	•	CHECK: CAN bus circuit between the Transmission Control Module harness connector terminal 46 and the Engine/Motor Control Module -J623- harness connector T94 / 68	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
		for resistance.	•	REPAIR: Faulty wiring or connector.
	•	SPECIFIED VALUE: $0.5 \Omega (\pm 0.3 \Omega)$ .	<b>*</b>	GO TO: Step 4 <u>⇒ page 680</u> .
	_	Trefe values obtained.		
4	•	Final Procedure	<b>-</b>	YES: CHECK: Transmission Control Module har-
	•	Perform a road test to verify repair.		ness connector for any damaged, pushed-out
	-	Does the original DTC return?		pins.
				REPAIR: As necessary.
			<b>♦</b>	If all electrical connections are OK:
			<b>*</b>	REPLACE: Transmission Control Module. Refer to appropriate repair manual.
			•	Clear the DTC's. Refer to <u>⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22</u> .
			•	Repair is complete. Generate Readiness Code. Refer to <u>⇒ C3.2 ode", page 15</u> .
	AG Volkswage		<b>♦</b>	Return vehicle to Customer.
		and the search of the search o	- ♦	NO: not Perform the diagnostic procedure for any DTC's.
		11653	•	If no DTC's return, the repair is complete.
			•	Return vehicle to customer.

atalytic Convertine the primary catalytic inc/Motor Control Module infineary indicating a "rich" or int. If the primary catalytic converting send the Engine/Motor Control Module - J623-signal indicating the lean mixture condition. The is then enriched with fuel until the oxygen has been placed" from the catalytic converter. This new condition, in it, in segistered by the Center Oxygen Sensor for Bank, 1 Catalytic Converter -G465- as a nonlinear signal indicating the rich mixture condition. The mixture is then leaned out by the Engine/Motor Control Module -J623-Aff, the nonlinear signal indicating the rich mixture condition. The mixture is then leaned out by the Engine/Motor Control Module -J623-Aff, the nonlinear signal indicating the rich mixture will again be enriched. The Rep. Gr.ST - Generic Scan Tool



cy, or period, during which the mixture is enriched or leaned out is variable, being dependent on the gas flow rate (engine load) at that moment.

The Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- contains the following components:

- Center Oxygen Sensor for Bank 1 Catalytic Converter -G465-.
- ♦ Heater for Oxygen Sensor Center Catalytic Converter -Z59-.

The Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- components cannot be serviced separately, and they must be serviced as a unit.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- ♦ Scan Tool.

#### Test requirements

- Scan Toul.

  st requirements

  Fuses OK.

  Battery voltage OK.

  Switch OFF all electrical and electronic accessories.

  'abicles with automatic transmission, ensure the selector

  is in "P".

  ensure the shifter lever
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4.

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM Preliminary Check to verify the customers complaint. Refer to Oxygen Sensor Preliminary Tests in ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 681 .</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- harness connector.</li> <li>CHECK: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- component connector terminals 1 to 2 for resistance.</li> <li>SPECIFIED VALUE: 2 – 4 Ω (+/-0.5 Ω @ 25° C).</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 3 ⇒ page 682.</li> <li>NO:</li> <li>REPLACE: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465. Refer to appropriate repair manual.</li> <li>GO TO: Step 6 ⇒ page 683.</li> </ul>



Step		Procedure	Result / Action to Take
3	•	IGNITION: ON.	<ul> <li>YES:</li> <li>GO TO: Step 4 ⇒ page 682</li> </ul>
	•	CHECK: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- harness connector terminal 1 to ground for voltage.	<ul> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> </ul>
	•	IGNITION: OFF. SPECIFIED VALUE: Battery voltage. Was Value obtained?	<ul> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 6 ⇒ page 683.</li> </ul>
5	•	RECONNECT: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- harness connector.  CONNECT: Scan Tool.  START: Engine and let Idle.  Perform the function test located in diagnostic mode 06. Refer to appropriate Diagnostic Mode 06 - Read Test Results for Specific Diagnostic Functions,  Ma.3 odes 01 - 0A", page 17.  IGNITION: OFF.  SPECIFIED VALUE: Mode 6 Pass.  Were Values obtained?  DISCONNECT: Center Oxygen Sensor for Bank 1 Catalytic Converter G465- harness connector.  REMOVE: Engine/Motor Control Module -J623 Refer to appropriate repair manual.  CHECK: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- harness connector.	→ YES:     ◆ FAULT: Is intermittent.     ◆ PERFORM: Visual Inspection of wiring and component.     ◆ CHECK: Wiring for open, high resistance, short or harness connector for damage corrosion, loose or broken terminals.
		catalytic Converter -G465- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T94 / 51 for resistance.  CHECK: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- harness connector terminal 3 to the Engine/Motor Control Module -J623- harness connector T94 / 71 for resistance.  CHECK: Center Oxygen Sensor for Bank 1 Catalytic Converter -G465- harness connector terminal 4 to the Engine/Motor Control Module -J623- harness connector T94 / 62 for resistance.  SPECIFIED VALUE: $0.5 \Omega (\pm 0.3 \Omega)$ .  Were Values obtained?	<ul> <li>component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals</li> </ul>



Step	Procedure Procedure	Result / Action to Take
6 10 10 10 10 10 10 10 10 10 10 10 10 10	<ul><li>Final Procedure</li><li>Perform a road test to verify repair.</li><li>Does the original DTC return?</li></ul>	→ YES:  ◆ CHECK: Engine/Motor Control Module -J623- harness connector for any damaged, pushed- out pins.
of commercial solver so		<ul> <li>REPAIR: As necessary.</li> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module -</li> </ul>
		J623 Refer to appropriate repair manual.  ◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22
		<ul> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15</li> <li>Return vehicle to Customer.</li> </ul>
orcomme		→ NO: Perform the diagnostic procedure for any DTC's.
SENIAHOTOU	t <sub>Q</sub>	If no DTC's return, the repair is complete.      Return vehicle to customer.
3.6.7	Engine Coolant Temperature Sen	eor -

# 3.6.7 Engine Coolant Temperature Sensor - G62-, Checking

kswagen AG. Volkswagen AG doe

#### **General Description**

The Engine Coolant Temperature Sensor -G62- sends information about the current coolant temperature to the Engine/Motor Control Module -J623-. It uses the coolant temperature as a correction value for calculating the injection quantity.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- ♦ Scan Tool.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4.



Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 684</li> <li>NO:</li> </ul>
	<ul><li>Was Complaint verified?</li></ul>	GATHER more information from customer about the complaint.
2	IGNITION: OFF.	<ul> <li>YES:</li> <li>GO TO: Step 3 ⇒ page 684</li> </ul>
	DISCONNECT: Engine Coolant Temperature Sensor -G62- harness connector.	<ul> <li>NO:</li> <li>REPLACE: Engine Coolant Temperature</li> </ul>
	<ul> <li>CHECK: Engine Coolant Temperature Sensor -G62- component connector terminals 1 to 2 for resistance.</li> </ul>	Sensor -G62 Refer to appropriate repair manual.
	• SPECIFIED VALUE: 2,250 $\Omega$ (+/- 750 $\Omega$ @ approx. 20° C).	◆ GO TO: Step 4 <u>⇒ page 684</u> .
	- Was Value obtained?	VEO
3	<ul> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> </ul>	<ul><li>YES:</li><li>TIP: The Engine Coolant Temperature Sen-</li></ul>
	CHECK: Engine Coolant Temperature Sensor -G62- harness connector terminal 1 to the Engine/Motor Control Module - J623- harness connector T60 / 57 for resistance.	to the next step.
	CHECK: Engine Coolant Temperature Sen-	◆ GO TO: Step 4 <u>⇒ page 684</u> .
	sor -G62- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 14 for resistance.	
	<ul> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Were Values obtained?</li> </ul>	CHECK; Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	, edulin	♦ REPAIR: Faulty wiring or connector.
	of the state of th	♦ GO TO: Step 4 <u>⇒ page 684</u> .
4	Final Procedure	- YES:
	<ul><li>Perform a road test to verify repair.</li><li>Does the original DTC return?</li></ul>	◆ CHECK: Engine/Motor Control Module -J623- harness connector for any damaged, pushed- out pins.
	in part c	♦ REPAIR: As necessary.
	s, in	♦ If all electrical connections are OK:
	purpose	REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
	ımercial	◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22 .
	to to all	Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15
	7. Article 1	Return vehicle to Customer.
	Photeodol oppling of the Protectal purposes, in pa	<ul> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> </ul>
	Old Color of Color	♦ If no DTC's return, the repair is complete.
	.DAn	Return vehicle to customer.



# 3.6.8 Engine Coolant Temperature Sensor on Radiator Outlet - G83-, Checking

#### **General Description**

The Engine Coolant Temperature Sensor On Radiator Outlet -G83 sends information about the current coolant temperature to the Engine/Motor Control Module -J623-. It uses the coolant temperature as a correction value for calculating the injection quantity.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

#### Test requirements

- Fuses OK.
- EBattery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P14 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4.

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify customers complaint. Refer to ⇒ C3.1 h page 14</li> <li>Was Complaint verified?</li> </ul>	the - YES: GO TO: Step 2 ⇒ page 685.  NO: GATHER more information from customer about the complaint.
2	<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Engine Coolant Temper Sensor On Radiator Outlet -G83- harnes connector.</li> <li>CHECK: Engine Coolant Temperature S sor On Radiator Outlet -G83- componer connector terminals 1 to 2 for resistance</li> <li>SPECIFIED VALUE: 2,250 Ω (+/- 750 Ω approx. 20° C).</li> <li>Was Value obtained?</li> </ul>	- NO:  REPLACE: Engine Coolant Temperature Sensor On Radiator Outlet -G83 Refer to appropriate repair manual.  GO TO: Step 4 ⇒ page 686.

Step		Procedure		Result / Action to Take
3	J62 • For CH sor nec	MOVE: Engine/Motor Control Module - 23 Refer to appropriate repair manual.  r 5K1 (from May 2009 – Oct 2010): ECK: Engine Coolant Temperature Senton Radiator Outlet -G83- harness concertor terminal 1 to the Engine/Motor Control dule - J623- harness connector T94 / 36	<b>*</b>	YES: TIP: The Engine Coolant Temperature Sensor On Radiator Outlet -G83- may fail under loaded operation; please swap a known good Engine Coolant Temperature Sensor On Radiator Outlet -G83- prior to continuing to the next step.
	for  For per har gin cor  CH sor nec Mo for	resistance.  r all others: CHECK: Engine Coolant Tem- rature Sensor On Radiator Outlet -G83- rness connector terminal 1 to the En- e/Motor Control Module - J623- harness nnector T94 / 18 for resistance.  ECK: Engine Coolant Temperature Sen- on Radiator Outlet -G83- harness con- ctor terminal 2 to the Engine/Motor Control	*	GO TO: Step 4 ⇒ page 686 .  NO: PERFORM: Visual Inspection of wiring and component.  CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.  REPAIR: Faulty wiring or connector.  GO TO: Step 4 ⇒ page 686 .
		ere Values obtained?		d'antee or
4	<ul><li>Fin</li><li>Per</li></ul>	al Procedure  form a road test to verify repair.  es the original DTC return?	•	YES: CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins. REPAIR: As necessary.
		mercial purposes, in part or in whole, is,	* *	If all electrical connections are OK:  REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.
		Copyride of commercial purpose	* * - * * *	Repair is complete. Generate Readiness Code. Refer to \$\Rightarrow\$ C3.2 ode", page 15 .  Return vehicle to Customers  NO: Perform the diagnostic procedure for any DTC's.  If no DTC's return, the repair is complete.  Return vehicle to customer.

## Engine Speed Sensor - G28-, Check-3.6.9 ing

#### **General Description**

The Engine Speed Sensor -G28- detects rpm and reference marks from a toothed wheel on the crankshaft. Without an engine speed signal, the engine will not start. If the engine speed signal fails while the engine is running, the engine will stop immediately.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.



♦ Scan Tool.

#### Test requirements

- · Fuses OK.
- Battery voltage OK.
- · Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4.

	ocedure		
Step	Procedure	Result / Action to Take	
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 687.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>	
	<ul> <li>IGNITION: OFF.</li> <li>CONNECT: Scan Tool.</li> <li>START or CRANK: Engine.</li> <li>CHECK: Engine rpm.</li> <li>SPECIFIED VALUE: Cranking or Idle rpm.</li> <li>IGNITION: OFF.</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>CONDITION: May be intermittent.</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 4 ⇒ page 688.</li> <li>NO:</li> <li>GO TO: Step 3 ⇒ page 687.</li> </ul>	
	<ul> <li>DISCONNECT: Engine Speed Sensor -G28-harness connector.</li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Engine Speed Sensor -G28- harness connector terminal 1 to the Engine/Motor Control Module - J623- harness connector T60 / 59 for resistance.</li> <li>CHECK: Engine Speed Sensor -G28- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 51 for resistance.</li> <li>CHECK: Engine Speed Sensor -G28- harness connector terminal 3 to the Engine/Motor Control Module - J623- harness connector T60 / 52 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Were Values obtained?</li> </ul>	<ul> <li>YES:</li> <li>REMOVE: Engine Speed Sensor -G28 Refer to appropriate repair manual.</li> <li>CHECK: Engine Speed Sensor -G28- sensor wheel for proper seating, damage and/or run - out. Repair as required. Refer to appropriate repair manual.</li> <li>Sensor wheel OK.</li> <li>REPLACE: Engine Speed Sensor -G28 Refer to appropriate repair manual.</li> <li>GO TO: Step 4 ⇒ page 688 .</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 4 ⇒ page 688 .</li> </ul>	



Step	Procedure	Result / Action to Take		
4	Final Procedure     Perform a road test to verify repair.     Does the original DTC return?	<ul> <li>YES:</li> <li>CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.</li> <li>REPAIR: As necessary.</li> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module -J623 Refer to appropriate repair manual.</li> <li>Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 - Erase DTC Memory", page 22.</li> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode page 15.</li> <li>Return vehicle to Customer.</li> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> <li>If no DTC's return, the repair is complete.</li> </ul>		
		Return vehicle to customer.		
Perform the diagnostic procedure for any DTC's return, the repair is complete.  ♦ Return vehicle to customer.  3.6.10 EVAP Canister Purge Regulator Valve  1 - N80-, Checking  General Description  The EVAP system is designed so the admission of fuel vapors takes place only at idle and at light part-throttle. The EVAP Canister Purge Regulator Valve 1 - N80- is activated by the Engine/Motor Control Module -J623- to accomplish this task.  Special tools and workshop equipment required  ♦ Multimeter.  ♦ Wiring Diagram.  ♦ Scan Tool.  Test requirements  • Fuses OK.  • Battery voltage OK.  • Switch OFF all electrical and electronic accessories.  • Vehicles with automatic transmission, ensure the selector				
Specia	al tools and workshop equipment required	ation <sub>ii</sub> ,		
	Itimeter.	The co		
	ing Diagram.	alifico		
	an Tool.			
	equirements	"40 MO		
	Wiring Diagram.  Scan Tool.  st requirements  Fuses OK.  Battery voltage OK.			
	itch OFF all electrical and electronic accessories.			
Vel	nicles with automatic transmission, ensure the sele er position is in "P".	ector		
Vel	nicles with manual transmission, ensure the shifter sition is in "N" with the parking brake applied.	lever		

#### **EVAP Canister Purge Regulator Valve** 3.6.10 1 - N80-, Checking

#### **General Description**

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4





Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 689</li> <li>NO:</li> </ul>
	<ul><li>Was Complaint verified?</li></ul>	GATHER more information from customer about the complaint.
2	<ul><li>IGNITION: OFF.</li><li>DISCONNECT: EVAP Canister Purge Regu-</li></ul>	<ul> <li>YES:</li> <li>GO TO: Step 3 ⇒ page 689 .</li> </ul>
	lator Valve 1 -N80- harness connector.	<ul><li>NO:</li><li>REPLACE: EVAP Canister Purge Regulator</li></ul>
	<ul> <li>CHECK: EVAP Canister Purge Regulator Valve 1 -N80- component connector termi- nals 1 to 2 for resistance.</li> </ul>	Valve 1 -N80 Refer to appropriate repair manual.  ◆ GO TO: Step 5 page 690 .
	• SPECIFIED VALUE: 15 – 35 Ω (+/- 5 Ω).	♦ GO AO: Step 5 → Apage 690 .
	<ul> <li>SPECIFIED VALUE: 15 – 35 Ω (+/- 5 Ω).</li> <li>Was Value obtained?</li> </ul>	SUATANICO.
3	IGNITION: ON.     CUECK: EVAD Consisten Divine Management	- YES: ♦ GO TO: Step 4 <u>⇒ page 689</u> .
	CHECK: EVAP Canister Purge Regulator Valve 1 -N80- harness connector terminal 1 to ground for voltage.	<ul> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> </ul>
	• IGNITION: OFF.	◆ CHECK: Wiring for open, high resistance,
	<ul> <li>SPECIFIED VALUE: Battery voltage.</li> <li>Was Value obtained?</li> </ul>	short or harness connector for damage, corrosion, loose or broken terminals.
	t original and containing and contai	♦ REPAIR: Faulty wiring or connector.
	s, in pa	♦ GO TO: Step 5 <u>⇒ page 690</u> .
4	<ul> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> </ul>	<ul><li>YES:</li><li>TIP: The EVAP Canister Purge Regulator</li></ul>
	CHECK: EVAP Canister Purge Regulator Valve 1 -N80- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 32 for resistance.	Valve 1 -N80- may fail under loaded operation; please swap a known good EVAP Canister Purge Regulator Valve 1 -N80- prior to continuing to the next step.
	• SPECIFIED VALUE: 0.5 Ω (£ 0.3 Ω).	◆ GO TO: Step 5 <u>⇒ page 690</u> .  - NO:
	– Was Value obtained?	A DEDECTION Viewel Incompation of winings and
	TOURDO STAINED.	♦ CHECK: Wiring for open, high resistance, short or harness connector for damage, corposion, loose or broken terminals.
		♦ REPAIR: Faulty wiring or connector.
		♦ GO TO: Step 5 <u>⇒ page 690</u> .



# SportWagen, Golf, Passat 2010 ➤ Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Step	Procedure	Result / Action to Take
o in whore, is not	<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	→ YES:     ◆ CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.     ◆ REPAIR: As necessary.
		<ul> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> </ul>
nereial purpo		<ul> <li>Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.</li> <li>Repair is complete. Generate Readiness</li> </ul>
of commen		Code. Refer to <u>⇒ C3.2 ode", page 15</u> .  ♦ Return vehicle to Customer.
.~	O TO THE STATE OF	<ul> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> <li>If no DTC's return, the repair is complete.</li> </ul>
	Protected by COPUTION	<ul> <li>Return vehicle to customer.</li> </ul>

#### 3.6.11 Fuel Delivery Unit - GX1- / Fuel Pump Relay - J17-, Checking

#### **General Description**



#### Note

If the vehicle is also equipped with a Fuel Supply Relay -J643-, it may be necessary to follow that pinpoint test also. Some vehicles were not equipped with this specific relay.

The Fuel Pump Relay -J17- is cycled on and off by the Engine/Motor Control Module -J623-, thereby providing power to the Transfer Fuel Pump -G6-, which is contained within the Fuel Delivery Unit -GX1-.

The Fuel Delivery Unit -GX1- contains the following compo-

- Transfer Fuel Pump -G6-.
- Fuel Level Sensor -G-.

The Fuel Delivery Unit -GX1- components cannot be serviced separately, and they must be serviced as a unit.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.



- Vehicles with automatic transmission, ensure the selector lever position is in "P".

- Vehicles with manual transmission, ....

  position is in "N" with the parking brake applied.

  Observe all safety precautions: ⇒ P1.1 recautions page 2 does not guarantee or supplied.

  Note: The property of the parking brake applied.

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 691</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
3	<ul> <li>IGNITION: OFF.</li> <li>REMOVE: Fuel Pump Relay -J17 Refer to appropriate repair manual.</li> <li>IGNITION: ON.</li> <li>CHECK: Fuel Pump Relay -J17- socket terminals 30 and 86 to ground for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: Battery voltage.</li> <li>Were Values obtained?</li> <li>CONNECT: Jumper wire, between the Fuel</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 3 ⇒ page 691.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 6 ⇒ page 692.</li> </ul>
	Pump Relay -J17- socket terminals 30 and 87.  IGNITION: ON.  SPECIFIED VALUE: Transfer Fuel Pump - G6- should be heard running.  IGNITION: OFF.  Was Value obtained?	OF TO Step 4 page 691 .  NO:  GO TO: Step 5 ⇒ page 692 .
4	<ul> <li>DISCONNECT: Jumper wire, between the Fuel Pump Relay -J17- socket terminals 30 and 87.</li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Fuel Pump Relay -J17- socket terminal 85 to the Engine/Motor Control Module -J623- harness connector T94 / 93 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω ( ± 0.3 Ω ).</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>REPLACE: Fuel Pump Relay -J17 Refer to appropriate repair manual.</li> <li>GO TO: Step 6 ⇒ page 692.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 6 ⇒ page 692.</li> </ul>

#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Step	Procedure	Result / Action to Take
5	DISCONNECT: Jumper wire, between the Fuel Pump Relay -J17- socket terminals 30 and 87.	<ul> <li>YES:</li> <li>◆ REPLACE: Fuel Delivery Unit -GX1 Refer to appropriate repair manual.</li> </ul>
	DISCONNECT: Fuel Delivery Unit -GX1- har- ness connector.	♦ GO TO: Step 6 <u>⇒ page 692</u> .
	CHECK: Fuel Pump Relay -J17- socket ter-	<ul> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> </ul>
	minal 87 to the Fuel Delivery Unit -GX1- harness connector terminal 1 for resistance.  • CHECK: Fuel Delivery Unit -GX1- harness connector terminal 5 to ground for resistance.	◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	• SPECIFIED VALUE: 0.5 Ω ( ± 0.3 Ω ).	REPAIR: Faulty wiring or connector.
	– Were Values obtained?	◆ GO TO: Step 6 <u>⇒ page 692</u> .
6	Final Procedure	- YES:
Ne, is no	Perform a road test to verify repair.  Page the original DTC return?	<ul> <li>CHECK: Engine/Motor Control Module -J623- harness connector for any damaged, pushed- out pins.</li> </ul>
n who	Does the original DTC return?	◆ REPAIR: As necessary.
art or i		♦ If all electrical connections are OK:
onmercial purposes, in part or in whole, is,		♦ REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
al purpos		◆ Clear the DTC's Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22
mmerci		◆ Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.
Č		◆ Return vehicle to Customer.
	Sensite of the state of the sta	<ul> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> </ul>
	1400 140 M	If no DTC's return, the repair is complete.
	Olkewagen Action of Coolected by Coolected b	Return vehicle to customer.

#### 3.6.12 Fuel Delivery Unit - GX1- / Fuel Supply Relay - J643-, Checking

#### **General Description**

The Fuel Supply Relay -J643- is cycled on and off by the Vehicle Electrical System Control Module -J519-, thereby providing power to the Transfer Fuel Pump -G6-, which is contained within the Fuel Delivery Unit -GX1-.

The Fuel Delivery Unit -GX1- contains the following components:

- Transfer Fuel Pump -G6-.
- Fuel Level Sensor -G-.

The Fuel Delivery Unit -GX1- components cannot be serviced separately, and they must be serviced as a unit.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.



♦ Scan Tool.

#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 45°

J	Step	Procedure	Result / Action to Take
in whole, is not bernii,	1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 693.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
commercial purposes, in part or in whole, is not been	3/1/0	<ul> <li>IGNITION: OFF.</li> <li>REMOVE: Fuel Supply Relay -J643 Refer to appropriate repair manual.</li> <li>IGNITION: ON.</li> <li>CHECK: Fuel Supply Relay -J643- socket terminals 30 and 86 to ground for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: Battery voltage.</li> <li>Were Values obtained?</li> <li>CONNECT: Jumper wire, between the Fuel Supply Relay -J643- socket terminals 30 and 87.</li> <li>IGNITION: ON.</li> <li>SPECIFIED VALUE: Transfer Fuel Pump - G6- should be heard running.</li> <li>IGNITION: OFF.</li> </ul>	NO: §     PERFORM: Visual Inspection of wiring and component.
	4	<ul> <li>Was Value obtained?</li> <li>DISCONNECT: Jumper wire, between the Fuel Supply Relay -J643- socket terminals 30 and 87.</li> <li>REMOVE: Vehicle Electrical System Control Module -J519 Refer to appropriate repair manual.</li> <li>CHECK: Fuel Supply Relay -J643- socket terminal 85 to the Vehicle Electrical System Control Module -J519- harness connector N / 38 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω ( ± 0.3 Ω ).</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>REPLACE: Fuel Supply Relay -J643 Refer to appropriate repair manual.</li> <li>GO TO: Step 6 ⇒ page 694.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 6 ⇒ page 694.</li> </ul>



Step	Procedure	Result / Action to Take			
5	DISCONNECT: Jumper wire, between the Fuel Supply Relay -J643- socket terminals 30 and 87.	<ul> <li>YES:</li> <li>◆ REPLACE: Fuel Delivery Unit -GX1 Refer to appropriate repair manual.</li> </ul>			
	DISCONNECT: Fuel Delivery Unit -GX1- har- ness connector.	◆ GO TO: Step 6 <u>⇒ page 694</u> .			
	CHECK: Fuel Supply Relay -J643- socket ter- minal 87 to the Fuel Delivery Unit -GX1- har-	<ul><li>NO:</li><li>◆ PERFORM: Visual Inspection of wiring and component.</li></ul>			
	<ul> <li>ness connector terminal 1 for resistance.</li> <li>CHECK: Fuel Delivery Unit -GX1- harness connector terminal 5 to ground for resistance.</li> </ul>	◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.			
	• SPECIFIED VALUE: $0.5 \Omega (\pm 0.3 \Omega)$ .	◆ REPAIR: Faulty wiring or connector.			
	– Were Values obtained?	◆ GO TO: Step 6 <u>⇒ page 694</u> .			
6	<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	<ul> <li>YES:</li> <li>CHECK: Vehicle Electrical System Control Module -J519- harness connector for any damaged, pushed-out pins.</li> </ul>			
		♦ REPAIR: As necessary.			
		♦ If all electrical connections are OK:			
	ei,	<ul> <li>REPLACE: Vehicle Electrical System Control Module -J519 Refer to appropriate repair manual.</li> </ul>			
	olkswagen AG. Volkswagen AG d	◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22			
	, horised by Your	Repair is complete. Generate Readiness Code, Refer to <u>⇒ C3.2 ode", page 15</u> .			
	)65 <sup>5</sup> 28 <sup>111</sup> 11	♦ Return vehicle to Customer.			
		<ul> <li>NO:</li> <li>◆ Perform the diagnostic procedure for any DTC's.</li> </ul>			
	Nous,	♦ If no DTC's return, the repair is complete.			
	hole,	Return vehicle to customer.			
3.6.1 Gener The Fu Modul The fu	The Fuel Injectors are controlled by the Engine/Motor Control Module 3623- and are mounted normally in the cylinder head. The fuel injectors spray high-pressure atomized fuel directly into the combustion chamber.  Special tools and workshop equipment required  Multimeter  Wiring Diagram  Scan Tool.  LED Test Lamp.  Test requirements  Fuses OK.  Battery voltage OK.				
=	Special tools and workshop equipment required				
	Itimeter	, inclass			
	♦ Wiring Diagram.				
	► Scan Tool.  LED Test Lamp.  Test requirements  SAUSONNE MONTAGE PROPRIES				
	D Test Lamp.  Adoption of the control of the contro	North Allena			
	Test requirements • Fuses OK.				
	Battery voltage OK.				
694	Rep. Gr.ST - Generic Scan Tool				

#### 3.6.13 Fuel Injectors, Checking

#### General Description

# Special tools and workshop equipment required Multimeter My Wiring Diagram Tool.

- Fuses OK.
- Battery voltage OK.





- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4.

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to <u>⇒ C3.1 heck"</u>, page 14.</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 695 .</li> <li>NO:</li> </ul>
	<ul><li>Was Complaint verified?</li></ul>	◆ GATHER more information from customer about the complaint.
2	IGNITION: OFF.	<ul> <li>YES:</li> <li>For 1K2 (from July 2009): GO TO: Step 3 ⇒</li> </ul>
	<ul> <li>DISCONNECT: Harness connector from suspect Fuel Injector.</li> </ul>	page 695
	CHECK: Suspect Fuel Injector component	◆ For all others: GO TO: Step 4 <u>⇒ page 695</u> .
	connector terminals 1 to 2 for resistance (refer to appropriate wiring diagram for correct terminal and connector locations).	<ul> <li>NO:</li> <li>REPLACE: Suspect Fuel Injector(s). Refer to appropriate repair manual.</li> </ul>
	• SPECIFIED VALUE: $0.5$ – $15~\Omega$ (@ approx. $20^{\circ}$ C).	◆ GO TO: Step 5 <u>⇒ page 696</u> .
	– Was Value obtained?	- YESkswagen AG, Volkswagen AG does not on
3	IGNITION: ON.	- YESKSWagen AG. Volkswagen AG does not guarantee OF NO:
	<ul> <li>CHECK: Suspect Fuel Injector harness con- nector terminal 1 to ground for voltage.</li> </ul>	- NO:
	IGNITION: OFF.	◆ PERFORM: Visual Inspection of wiring and component.
	SPECIFIED VALUE: Battery voltage	◆ CHECK: Wiring for open, high resistance,
	- Was Value obtained?	short or harness connector for damage, corrosion, loose or broken terminals.
	hole,	♦ REPAIR: Faulty wiring or connector.
	0	♦ GO TO: Step 5 <u>⇒ page 696</u> .
4	<ul> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> </ul>	<ul><li>YES:</li><li>TIP: The Fuel Injector may fail under loaded</li></ul>
	For all others: CHECK: Suspect Fuel Injec-	operation; please swap a known good Fuel Injector prior to continuing to the next step.
	tor harness connector terminal ato the En- gine/Motor Control Module - J623- harness	◆ GO TO: Step 5 ⇒ page 696.
	connector T60 / xx for resistance (refer to ap-	- NO:
	propriate wiring diagram for correct terminal and connector locations).	◆ PERFORM: Visual Inspection of wiring and component.
	<ul> <li>CHECK: Suspect Fuel Injector harness con- nector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / xx</li> </ul>	◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, cor-
	for resistance (refer to appropriate wiring dia-	
	gram for correct terminal and connector loca- tions).	♦ REPAIR: Faulty wiring or connector.
	• SPECIFIED VALUE: $0.5 \Omega (\pm 0.3 \Omega)$ .	ON Alberton And Salar S
	– Were Values obtained?	rosion, loose or broken terminals.  ◆ REPAIR: Faulty wiring or connector.  • AGO TO: Step 5 ⇒ page 696.  • DY USBENNSHION, KOUNDING.



Step	Procedure	Result / Action to Take
5	<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	<ul> <li>YES:</li> <li>◆ CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.</li> </ul>
	3	♦ REPAIR: As necessary.
		◆ If all electrical connections are OK:
		◆ REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
	ukswagen AG. Volkswagen	◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – AG Erase DTC Memory", page 22.
	uhorised by Volk	<ul> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15</li> </ul>
	11655 20	◆ Return vehicle to Customer.
	Joseph John Market Market State of the State	<ul> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> </ul>
	$i_{n}$	♦ If no DTC's return, the repair is complete.
	whole	♦ Return vehicle to customer.

#### 3.6.14 Ignition Coils With Power Output Stage, Checking

#### **General Description**

ATY

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Shug with The ignition coil must transform the relatively low 12 V on-board vehicle voltage to the high ignition voltage required and supply the energy stored in that voltage to the spark plug. The functional principle of the ignition coil is relatively simple. It has a primary winding (small number of turns) and a secondary winding (lots of turns). The turn ratio between the number of primary and secondary winding turns determines the level of the voltage generated at the output. The Ignition Coils With Power Output Stage are plugged directly into the spark plug. This means the ignition energy can be transferred directly to the spark plug with virtually zero power loss.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.
- ◆ LED Test Lamp.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.



View clean working conditions:  $\Rightarrow$  W1.2 orking Conditions", page 4.

2 .	PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.  Was Complaint verified?  IGNITION: OFF.  DISCONNECT: Suspect Ignition Coil With Power Output Stage harness connector.  IGNITION: ON.  CHECK: Suspect Ignition Coil With Power Output Stage harness connector terminals 1 to 2 and 4 for voltage.  IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 697.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> <li>YES:</li> <li>GO TO: Step 3 ⇒ page 697.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 5 ⇒ page 698.</li> </ul>
•	IGNITION: OFF.  DISCONNECT: Suspect Ignition Coil With Power Output Stage harness connector.  IGNITION: ON.  CHECK: Suspect Ignition Coil With Power Output Stage harness connector terminals 1 to 2 and 4 for voltage.  IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.	about the complaint.  - YES:  ◆ GO TO: Step 3 ⇒ page 697.  - NO:  ◆ PERFORM: Visual Inspection of wiring and component.  ◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.  ◆ REPAIR: Faulty wiring or connector.
•	DISCONNECT: Suspect Ignition Coil With Power Output Stage harness connector.  IGNITION: ON.  CHECK: Suspect Ignition Coil With Power Output Stage harness connector terminals 1 to 2 and 4 for voltage.  IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.	<ul> <li>◆ GO TO: Step 3 ⇒ page 697.</li> <li>NO:</li> <li>◆ PERFORM: Visual Inspection of wiring and component.</li> <li>◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>◆ REPAIR: Faulty wiring or connector.</li> </ul>
	Power Output Stage harness connector.  IGNITION: ON.  CHECK: Suspect Ignition Coil With Power Output Stage harness connector terminals 1 to 2 and 4 for voltage.  IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.	<ul> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> </ul>
	CHECK: Suspect Ignition Coil With Power Output Stage harness connector terminals 1 to 2 and 4 for voltage.  IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.	<ul> <li>component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> </ul>
	Output Stage harness connector terminals 1 to 2 and 4 for voltage.  IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.	short or harness connector for damage, corrosion, loose or broken terminals.  • REPAIR: Faulty wiring or connector.
	SPECIFIED VALUE: Battery voltage.	
	, ,	♦ GO TO: Step 5 <u>⇒ page 698</u> .
l_	\\\-\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
	Were Values obtained?	
3	REMOVE: Engine/Motor Control Module G. Volk J623 Refer to appropriate repair manual.	▼WagYES: ◆ GOTO: Step 4 ⇒ page 697 .
•	CHECK: Suspect Ignition Coil With Power Output Stage harness connector terminal 3 to the Engine/Motor Control Module - J623-harness connector T60 / xx for resistance (re-	NO:     PERFORM: Visual Inspection of wiring and component.     Component.
	fer to appropriate wiring diagram for correct terminal and connector locations).	♦ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
•	SPECIFIED VALUE: 0.5 $\Omega$ (± 0.3 $\Omega$ ).	REPAIR: Faulty wiring or connector.
_	Was Value obtained?	◆ GO TO: Step 5 <u>⇒ page 698</u> .
4	DISCONNECT: All of the Fuel Injectors (refer to appropriate wiring diagram for correct terminal and connector locations).	<ul> <li>YES:</li> <li>◆ REPLACE: Ignition Coil With Power Output Stage. Refer to appropriate repair manual.</li> </ul>
•	DISCONNECT: Cold Start Injector (If applicable).	◆ GO TO: Step 5 <u>⇒ page 698</u> .
	CONNECT: Engine/Motor Control Module - J623- harmess connectors.	<ul> <li>NO:</li> <li>GO TO: Step 5 ⇒ page 698 .</li> </ul>
•	CONNECT: LED Test Lamp to Suspect Ignition Coil With Power Output Stage harness connector terminals 3 to 2.	→ NO:  GO TO: Step 5 → page 698.  Sof information in the property of the page 1988.
•	CRANK: Engine	, as in the second seco
•	SPECIFIED VALUE: LED Test Lamp should Flicker ON & OFF.  Was Value obtained?	Contract Them
	Was Value obtained?	O Valingin

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(\ā/)
$\langle \mathbf{v} \mathbf{v} \rangle$

Step	Procedure AG. Volkswagen AG. de	Result / Action to Take
5	<ul> <li>Final Procedure of the Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	→ YES:     ◆ CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.     ◆ REPAIR: As necessary.
		♦ If all electrical connections are OK:
	s, in part or in whole, is not benning.	♦ REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
	orin who	◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory" page 22.
	, in part	◆ Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.
1	16	◆ Return vehicle to Customer.
	Mate of commercial purpose	<ul> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> </ul>
	THEO S	♦ If no DTC's return, the repair is complete.
	to all the second secon	♦ Return vehicle to customer.

## DA nagsweavolkenitingo inant Intake Manifold Sensor - GX9-, Check-3.6.15 Protected by copy ing

#### **General Description**

The air mass and charge pressure are two factors used for engine load management. For this purpose, there are several sensors with absolutely identical functions. They measure the intake air temperature and the intake manifold pressure. The first sender unit is located upstream of the Throttle Valve Control Module -J338/GX3- in the Intake Manifold Sensor -GX9-. They measure the pressure and temperature of the air in each individual cylinder bank. The values measured here correspond to the actual air mass in the cylinder bank(s).

The Intake Manifold Sensor -GX9- contains the following components:

- Intake Air Temperature Sensor -G42-.
- Manifold Absolute Pressure Sensor -G71-.

The Intake Manifold Sensor -GX9- components cannot be serviced separately, and they must be serviced as a unit.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".



- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions:  $\Rightarrow$  P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", <u>page 4</u> .

Step	Procedure	Result / Action to Take
1	PERFORM: Preliminary Check to verify the customers complaint. Refer to <u>⇒ C3.1 heck", page 14</u> .      Was Complaint verified?	→ GOTQ: Step 2 ⇒ page 699 .  NO:  GATHER more information from customer
	,x duft.	about the complaint.
2	IGNITION: OFF.	- YES: ▲ CO TO: Stop 3 - page 600
	DISCONNECT: Intake Manifold Sensor -     GX9- harness connector.	◆ GO TO: Step 3 ⇒ page 699 .  - NO:
	IGNITION: ON.	◆ GO TO: Step 4 <u>⇒ page 699</u> .
	CECK: Intake Manifold Sensor -GX9- harness connector terminals 1 to 3 for voltage.	to the correctness o
	IGNITION: OFF.	orrec
	SPECIFIED VALUE: About 5.0 V.	stnes
	- Was Value obtained?	S of i
3	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	<ul> <li>YES:</li> <li>◆ REPLACE: Intake Manifold Sensor -GX9</li> </ul>
	CHECK: Intake Manifold Sensor -GX9- har- ness connector terminal 2 to the Engine/Mo- tor Control Module - J623- harness connector T60 / 42 for resistance.	Refer to appropriate repair manual.  ◆ GO TO: Step 5 ⇒ page 700 .  - NO:  ◆ PERFORM: Visual Inspection of wiring and
	CHECK: Intake Manifold Sensor -GX9- har- ness connector terminal 4 to the Engine/Motor Control Module - J623- harness connector T60 / 56 for resistance - Japane	CHECK: Wiring for open, high resistance, short or harness connector for damage, cor-
	• SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).	prosion, loose or broken terminals.
	- Were Values obtained?	<ul> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 5 ⇒ page 700.</li> </ul>
4	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	<ul> <li>YES:</li> <li>GO TO: Step 5 ⇒ page 700 .</li> </ul>
	CHECK: Intake Manifold Sensor -GX9- har- ness connector terminal 1 to the Engine/Mo- tor Control Module - J623- harness connector T60 / 13 for resistance.	<ul> <li>NO:</li> <li>◆ PERFORM: Visual Inspection of wiring and component.</li> </ul>
	CHECK: Intake Manifold Sensor -GX9- harness connector terminal 3 to the Engine/Motor Control Module - J623- harness connector	◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, cor- rosion, loose or broken terminals.
	T60 / 44 for resistance.	♦ REPAIR: Faulty wiring or connector.
	• SPECIFIED VALUE: $0.5 \Omega (\pm 0.3 \Omega)$ .	◆ GO TO: Step 5 <u>⇒ page 700</u> .
	Were Values obtained?	

#### Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022

Step	Procedure	Result / Action to Take
5	<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	<ul> <li>YES:</li> <li>CHECK: Engine/Motor Control Module - J623- harness connector for any damaged, pushed-out pins.</li> <li>REPAIR: As necessary.</li> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 - Erase DTC Memory", page 22.</li> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.</li> <li>Return vehicle to Customer.</li> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> <li>If no DTC's return, the repair is complete.</li> </ul>
		Return venicle to customer.
Gener	al Description	"I'anto
engine The E detern timing <b>Speci</b> a	nock Sensor 1 -G61- is a tuned acceleremeter on e which converts engine vibration to an electrical singine/Motor Control Module -J623- uses this signation the presence of engine knock and to retard signation to the presence of engine knock and to retard signation and workshop equipment required	the signal. all to park
engine The E detern timing <b>Specia</b> • Mu	nock Sensor 1 -G61- is a tuned acceleremeter on e which converts engine vibration to an electrical singine/Motor Control Module -J623 uses this signatine the presence of engine knock and to retard signation to the presence of engine knock and to retard signation and workshop equipment required limeter.	the signal. all to park
engine The E detern timing Specia Mu Wil	nock Sensor 1 -G61- is a tuned acceleremeter on a which converts engine vibration to an electrical sengine/Motor Control Module -J623 uses this signation the presence of engine knock and to retard sengine tools and workshop equipment required altimeter.  Ting Diagram.	the signal. all to park
engine The E detern timing Specia  Mu Will Sc Test re	equirements ses OK.	signal. al to park
engine The E detern timing Specia  Mu  Will Sca Test re Bar	nock Sensor 1 -G61- is a tuned accelerometer on a which converts engine vibration to an electrical singine/Motor Control Module -J623 uses this signation the presence of engine knock and to retard signation to the presence of engine knock and to retard signation to retard signation and workshop equipment required limeter.  Ting Diagram.  Tool.  Equirements  Sees OK.  Stery voltage OK.  Sitch OFF all electrical and electronic accessories.	the signal. al to park
engine The E detern timing Specia  Mu  Win Sca Test re Ba Sw Ve	equirements ses OK. ttery voltage OK.	the signal. all to park
engine The E detern timing Specia  Mu  Will Sci Test re Ba Sw Ve lev	equirements ses OK. ttery voltage OK. itch OFF all electrical and electronic accessories. hicles with automatic transmission, ensure the sel	the signal. all to park  ector  ector
engine The E detern timing Specia  Mu  Viii Sca Test re Ba Sw Ve lev Ve pos	equirements sees OK. ttery voltage OK. itch OFF all electrical and electronic accessories. hicles with automatic transmission, ensure the select position is in "P". hicles with manual transmission, ensure the shifte	ector  er lever  page 2 .
engine The E detern timing Specia  Mu  Viii Sc: Test re Ba Sw Ve lev Ve pos Ob	equirements ses OK.  Itery voltage OK.  Itery volta	ector  Present State of the signal and to park  Present State of the signal and to park  Present State of the signal and the s
engine The E detern timing Specia  Mu  Viii Sc: Test re Ba Sw Ve lev Ve pos Ob	equirements ses OK.  Itery voltage OK.  Itery volta	ector or lever  Dage 2.  tions"

## 3.6.16

#### **General Description**

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2
- View clean working conditions: ⇒ W1.2 orking Conditions", <u>page 4</u> .





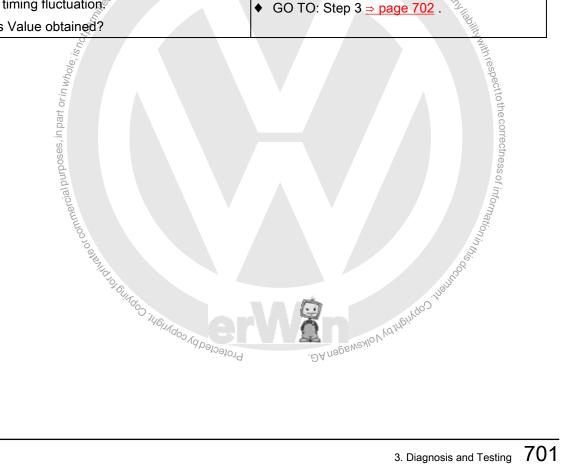
#### **Test Procedure**



#### Note

- Prior to beginning the test procedure, make sure to check the items listed below:
- ♦ Poor fuel quality
- Ignition timing malfunction
- Loose components on the engine block
- Engine temperature must be in the normal range

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 701 .</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	IGNITION: OFF.	<ul><li>YES:</li><li>◆ CONDITION: May be intermittent.</li></ul>
	<ul> <li>CONNECT: Scan tool.</li> </ul>	•
	START: Engine and let Idle.	◆ PERFORM: Visual Inspection of wiring and component.
	CHECK: The ignition advance timing value.	◆ CHECK: Wiring for open, high resistance,
	and monitor for any fluctuations in the ignition	o v short or harness connector for damage, corrosion, loose or broken terminals.
	timing advance value.	◆ REPAIR: Faulty wiring or connector.
	IGNITION: OFF.  [58]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68]  [68	♦ GO TO: Step 4 <u>⇒ page 702</u> .
	SPECIFIED VALUE: 15-10 degrees of ignition timing fluctuation.	- NO: ◆ GO TO: Step 3 <u>⇒ page 702</u> .
	<ul><li>Was Value obtained?</li></ul>	S III





Step		Procedure		Result / Action to Take
3		REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  DISCONNECT: Knock Sensor 1 -G61- harness connector.		YES: TIP: The Knock Sensor 1 -G61- may fail under loaded operation; please swap a known good Knock Sensor 1 -G61- prior to continuing to the next step.
	•	CHECK: Knock Sensor 1 -G61- harness connector terminal 1 to the Engine/Motor Control Module - J623- harness connector T60 / 8 for resistance.	<b>*</b> -	GO TO: Step 4 <u>⇒ page 702</u> .  NO: PERFORM: Visual Inspection of wiring and
	•	CHECK: Knock Sensor 1 -G61- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 9 for resistance.		component.  CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	•	resistance.  1K2, 162 (from Apr 2010 to Nov 2010), AJ5 (from Jul 2009 to Jun 2011), 5K1 (from May 2009 to Oct 2011), A32: CHECK: Knock Sensor 1 -G61- harness connector terminal 3 to the Engine/Motor Control Module, J623 harveness connector T60 / 13 for resistance.  162 (from Dec 2010), AJ5 (from Jul 2011), 5K1 (from Nov 2011): CHECK: Knock Sensor 1 -G61- harness connector terminal 3 to the Engine/Motor Control Module - J623- harness connector T60 / 24 for resistance.  SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).	<ul><li>♦</li><li>en A</li></ul>	REPAIR: Faulty wiring or connector.  GO TO: Step 4 <u>⇒ page 702</u> .
	•	162 (from Dec 2010), AJ5 (from Jul 2011), 5K1 (from Nov 2011): CHECK: Knock Sensor 1-G61- harness connector terminal 3 to the Engine/Motor Control Module - J623- harness connector 160 / 24 for resistance.		Ouarantee or accept & The second seco
	•	SPECIFIED VALUE: $0.5 \Omega$ (± $0.3 \Omega$ ).		bility at
4	•	Were Values obtained?  Final Procedure  Perform a road test to verify repair.  Does the original DTC return?	-	YES: CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.
		Does the original DTC return?	· · · · ·	REPAIR: As necessary.  If all electrical connections are OK:  REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  Clear the DTC's. Refer to M3.3.4 ode 04 - Erase DTC Memory", page 22  Repair is complete. Generate Readiness Code. Refer to C3.2 ode", page 15  Return vehicle to Customer.  NO: Perform the diagnostic procedure for any DTC's  If no DTC's return, the repair is complete.  Return vehicle to customer.

#### 3.6.17 Knock Sensor 2 - G66-, Checking

#### **General Description**

The Knock Sensor 2 -G66- is a tuned accelerometer on the engine which converts engine vibration to an electrical signal. The Engine/Motor Control Module -J623- uses this signal to determine the presence of engine knock and to retard spark timing, if necessary.



#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- ♦ Scan Tool.

#### **Test requirements**

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P"
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4

#### **Test Procedure**



#### Note

- Prior to beginning the test procedure, make sure to check the items listed below:
- Poor fuel quality
- Ignition timing malfunction
- Loose components on the engine block
- ♦ Engine temperature must be in the normal range

Je	etta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07.2022
Special tools and workshop equipment required	Generic Scan Tool - Edition 07.2022  Swagen AG does not guarantee of acceptantility with the correctness level ever lever leve
<ul> <li>Loose components on the engine block</li> <li>◆ Engine temperature must be in the normal range</li> </ul>	O juditod je
Step Procedure	Result Action to Take
PERFORM: Preliminary Check to verify the customers complaint. Refer to      □ 3.1 heck", page 14.      □ Was Complaint verified?      □ IGNITION: OFF.	YES:
<ul> <li>IGNITION: OFF.</li> <li>CONNECT: Scan tool.</li> <li>START: Engine and let Idle.</li> <li>CHECK: The ignition advance timing value.</li> <li>TAP: Near the Knock Sensor 2 -G66- area and monitor for any fluctuations in the ignition timing advance value.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: 1 – 10 degrees of ignition timing fluctuation.</li> </ul>	<ul> <li>CONDITION: May be intermittent.</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, correction leaves or broken terminals.</li> </ul>
	♦ GO TO: Step 3 <u>⇒ page 704</u> .



Step		Procedure		Result / Action to Take
3	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  DISCONNECT: Knock Sensor 2 -G66- har-	<b>→</b>	YES: TIP: The Knock Sensor 2 -G66- may fail un- der loaded operation; please swap a known good Knock Sensor 2 -G66- prior to continu-
	•	ness connector.  CHECK: Knock Sensor 2 -G66- harness connector terminal 1 to the Engine/Motor Control Module - J623- harness connector T60 / 10 for resistance.	_	ing to the next step.  GO TO: Step 4 ⇒ page 704 .  NO: PERFORM: Visual Inspection of wiring and component.
	•	CHECK: Knock Sensor 2 -G66- harness connector terminal 2 to the Engine/Motor Control Module - J623- harness connector T60 / 11 for resistance.	*	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	•	1K2, 162 (from Apr 2010 to Nov 2010), AJ5 (from Jul 2009 to Jun 2011), 5K1 (from May 2009 to Oct 2011), A32: CHECK: Knock Sensor 2 -G66- harness connector terminal 3 to the Engine/Motor Control Module - J623- harness connector T60 / 13 for resistance.	♦ ♦	REPAIR: Faulty wiring or connector.  GO TO: Step 4 ⇒ page 704.  Swagen AG. Volkswagen AG does not guarantee of acceptable light.
	•	162 (from Dec 2010), AJ5 (from Jul 2011), 5K1 (from Nov 2011): CHECK: Knock Sensor 2 -G66- harness connector terminal 3 to the Engine/Motor Control Module - J623- harness connector T60 / 23 for resistance.		arantee or accept and like in
	•  -	SPECIFIED VALUE: $0.5 \Omega$ ( $\stackrel{\bullet}{2}$ $0.3 \Omega$ ). Were Values obtained?		
4	•	Perform a road test to verify repair.  Does the original DTC return?	<b>-</b>	YES: CHECK: Engine/Motor Control Module -J623- harness connector for any damaged, pushed- out pins. REPAIR: As necessary. If all electrical connections are OK: REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
		u. se	*	REPAIR: As necessary.
		rpose	•	If all electrical connections are OK:
		ercial pu	•	REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
		of comm	•	Clear the DTC's. Refer to $\Rightarrow$ M3.3.4 ode 04 – $\$$
		State of the state	•	Erase DTC Memory", page 22 .  Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15 .
		Solving to the things of commercial purposes, in grant of the control of the cont	<ul><li>4</li><li>9p6</li></ul>	Return vehicle to Customer.  NO: Perform the diagnostic procedure for any DTC's.  If no DTC's return, the repair is complete.
			<b>*</b>	If no DTC's return, the repair is complete.  Return vehicle to customer.

# 3.6.18 Leak Detection Pump - V144-, Checking (3 Pin)

#### **General Description**

Whenever the engine is running, vacuum is applied to the Vacuum Switch. This switch applies vacuum to the Upper Chamber of the pump when it receives a ground signal from the Engine/Motor Control Module -J623-. This signal is a duty cycle pulse of approximately 40%. When vacuum is applied to the



in fresh air flows in through the One-wessing the spring above the diaphragm. Win in begins to rise, the Reed Switch, attached to Jim Rod, opens. When the Vacuum Switch closes, in the Upper Chamber is released. As a result, pushes the Diaphragm down. As the Diaphragm is cown, the air in the Lower Chamber is pushed out of Jim Wall to the CVAP system. This process use until the pressure in the EVAP system no longer is the spring to push the Diaphragm down. With tension the Diaphragm the ECM walls for a terrain period of time and the Diaphragm has fallen to its lowest point. When the Switch toloses, the ECM may cycle the LDP to build quely system pressure again. The ECM measures the time it takes for the Reed Switch toloses and ECM may cycle the LDP to build quely system pressure again. The ECM measures the time it takes for the Reed Switch toloses, the ECM may cycle the LDP to build quely system pressure again. The ECM measures the time it takes for the Reed Switch toloses, the ECM may cycle the LDP to build quely system. The slower the Diaphragm falls after the pump stops raning, the less air is leaking out of the EVAP system.

\*I dools and workshop equipment required

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\*\*Taccessories.\*

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\*\*J. Action to Take

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Step	Proced	ure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary customers complaint. R page 14.</li> <li>Was Complaint verified</li> </ul>	efer to <u>⇒ C3.1 heck",</u>  -	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 705.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	<ul> <li>REMOVE: Evaporative propriate repair manual</li> </ul>	Canister. Refer to ap-	<ul> <li>YES:</li> <li>GO TO Step 3 ⇒ page 706 .</li> </ul>
	Plug or Cap off the Leal V144- port going to the  OONNEGE Hand	vent filter.	<ul> <li>NO:</li> <li>REPLACE: Leak Detection Pump - V144</li> <li>Refer to appropriate repair manual.</li> </ul>
	<ul> <li>CONNECT: Hand vacue Detection Pump - V144 0.700 bar and see if the</li> </ul>	- CAN port and apply	♦ GO TO: Step 5 <u>⇒ page 706</u> .
	– Did the vacuum hold?		



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Step	Procedure	Result / Action to Take
3	<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Leak Detection Pump -V144-harness connector.</li> <li>IGNITION: ON.</li> <li>CHECK: Leak Detection Pump -V144- harness connector terminal 3 to ground for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: Battery voltage.</li> <li>Was Value obtained?</li> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>CHECK: Leak Detection Pump -V144- harness connector terminal 1 to the Engine/Motor Control Module -J623- harness connector T94 / 64 for resistance.</li> <li>CHECK: Leak Detection Pump -V144- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T94 / 25 for resistance.</li> <li>SPECIFIED VALUE: 0.5 O (+ 0.3 O)</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 4 ⇒ page 706.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 5 ⇒ page 706.</li> <li>YES:</li> <li>REPLACE: Leak Detection Pump -V144 Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 706.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> </ul>
5	Were Values obtained?  Final Procedure  Perform a road test to verify repair.  Does the original DTC return?	<ul> <li>GO TO: Step 5 ⇒ page 706.</li> <li>YES:</li> <li>CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.</li> <li>REPAIR: As necessary.</li> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module -J623 Refer to appropriate repair manual.</li> <li>Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 - Erase DTC Memory", page 22.</li> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.</li> <li>Return vehicle to Customer.</li> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> <li>If no DTC's return, the repair is complete.</li> <li>Return vehicle to customer.</li> </ul>

#### Leak Detection Pump - V144-, Check-3.6.19 ing (4 Pin)

## **General Description**

Whenever the engine is running, vacuum is applied to the Vacuum Switch. This switch applies vacuum to the Upper Chamber of the pump when it receives a ground signal from the Engine/Motor Control Module -J623-. This signal is a duty cycle



approximately 40%. When vacuum is applied to the Chamber, fresh air flows in through the One-way Inlet ve, compressing the spring above the diaphragm. When Volkswagen, the Diaphragm Bogins to rise, the Reed Switch, altached to the Diaphragm Rod, opens. When the Vacuum Switch closes, the vacuum in the Upper Chamber is released. As a result, the spring pushes the Diaphragm down. As the Diaphragm is "shed down, the air in the Lower Chamber is pushed out of "One-way Outlet Valve into the EVAP system. This process "ies until the pressure in the EVAP system no longer "e spring to push the Diaphragm down. With tension "shragm, the ECM wells for a certain period of time the Diaphragm to fall. The Reed Switch closing "Diaphragm shas fallen to its lowest point. When closes, the ECM measures the time it takes "o close once the Leak Detection Pump "ninig to determine if there is a leak in the "Naphragm falls after the pump stops "ng out of the EVAP system.

"uipment required"

"O Vuscoment Assurance Chamber of the Company of the EVAP system.

"Uipment required"

- View clean working conditions: ⇒ W1.2 orking Conditions", page 4

Step		Procedure	Result / Action to Take
1	_	PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14 .  Was Complaint verified?	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 707.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	•	REMOVE: Evaporative Canister. Refer to appropriate repair manual.	<ul><li>YES:</li><li>GO TO Step 3 ⇒ page 708 .</li></ul>
	•	Plug or Cap off the Leak Detection Pump - V144- port going to the vent filter.	<ul> <li>NO:</li> <li>REPLACE: Leak Detection Pump - V144</li> <li>Refer to appropriate repair manual.</li> </ul>
	•	CONNECT: Hand vacuum pump to the Leak Detection Pump - V144- CAN port and apply 0.700 bar and see if the vacuum holds.	♦ GO TO: Step 5 <u>⇒ page 708</u> .
	-	Did the vacuum hold?	

Step		Procedure		Result / Action to Take
3	•	IGNITION: OFF.	_	YES:
	•	DISCONNECT: Leak Detection Pump -V144-harness connector.	_	GO TO: Step 4 <del>⇒ page 708</del> .  NO:
	•	IGNITION: ON.	•	PERFORM: Visual Inspection of wiring and component.
	•	CHECK: Leak Detection Pump -V144- harness connector terminal 4 to ground for voltage.	<b>*</b>	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	•	IGNITION: OFF.	<b>*</b>	REPAIR: Faulty wiring or connector.
	•	SPECIFIED VALUE: Battery voltage.	<b>*</b>	GO TO: Step 5 <u>⇒ page 708</u> .
	_	Was Value obtained?		
4	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	<b>→</b>	YES: REPLACE: Leak Detection Pump -V144 Refer to appropriate repair manual.
	•	CHECK: Leak Detection Pump -V144- harness connector terminal 1 to the Engine/Motor Control Module -J623- harness connector	<b>*</b>	GO TO: Step 5 <u>⇒ page 708</u> .
		T94 / 28 for resistance.  CHECK: Leak Detection Pump -V144- har-	<b>→</b>	NO: PERFORM: Visual Inspection of wiring and component.
		ness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T94 / 25 for resistance.	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	•	CHECK: Leak Detection Pump -V144- harness connector terminal 3 to the Engine/Motor Control Module -J623- harness connector T94 / 9 for resistance.	• lage	REPAIR Faulty wiring or connector.  GO TO: Step 5 ⇒ page 708.
		SPECIFIED VALUE: 0.5 $\Omega$ (± 0.3 $\Omega$ ).		"EEO,-
	_	Were Values obtained?		CERPE
5	•	Final Procedure  Perform a road test to verify repair.  Does the original DTC return?	<b>-</b>	YES: CHECK: Engine/Motor Control Module 1623- harness connector for any damaged, pushed- out pins.
		2000 the original 210 of	•	REPAIR: As necessary.  If all electrical connections are OK:
		orin	<b>*</b>	If all electrical connections are OK:
		; in part	•	REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
		Sesodun	•	Clear the DTC's. Refer to $\Rightarrow$ M3.3.4 ode 04  Frase DTC Memory", page 22.  Repair is complete. Generate Readiness Code. Refer to $\Rightarrow$ C3.2 ode", page 15.  Return vehicle to Customer.  NO:
		nercial p	*	Repair is complete. Generate Readiness Code. Refer to <u>⇒ C3.2 ode", page 15</u> .
		TIMO 3 to	<b>*</b>	Return vehicle to Customer.
		Copyright: Copyright of the Commercial purposes, in part or in	<b>*</b>	NO: Perform the diagnostic procedure for any DTC's.
		140m	<b>*</b>	If no DTC's return, the repair is complete.  Return vehicle to customer.
		doo19pə	222	Ad DA negswaxho V vd *
		`#1	-at0	DA Man



#### 3.6.20 Motronic Engine Control Module Power Supply Relay - J271-, Checking

#### **General Description**

The following procedure is used to diagnose the Motronic Engine Control Module Power Supply Relay -J271- and the Engine/Motor Control Module -J623- power supply voltage that is provided by the Motronic Engine Control Module Power Supply Relay -J271-.

#### Special tools and workshop equipment required

- ♦ Multimeter.
- ♦ Wiring Diagram.
- ♦ Scan Tool.

#### Test requirements

- Fuses OK.

- it requirements

  Fuses OK.

  Battery voltage OK.

  Switch OFF all electrical and electronic accessories on AG does not guarantee of a consistion is in "P".

  Thicles with automatic transmission, ensure the selector of a consistion is in "P".

  Thicke applied.

  The provided Head of the constant of the cons
- <u>page 4</u> .

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 709</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Motronic Engine Control Module Power Supply Relay -J271- from the Fuse Panel B -SB- in the engine compartment (refer to appropriate wiring diagram).</li> <li>IGNITION: ON.</li> <li>5K1 (from May 2009): CHECK: Motronic Engine Control Module Power Supply Relay -J271- socket terminals 30 and 85 to ground for voltage.</li> <li>All others: CHECK: Motronic Engine Control Module Power Supply Relay -J271- socket terminals 30 and 86 to ground for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: Battery voltage.</li> <li>Were Values obtained?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 3 ⇒ page ₹10.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 6 ⇒ page 711.</li> </ul>

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Step		Procedure		Result / Action to Take
3	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	<b>-</b>	YES: GO TO: Step 4 <del>⇒ page 710</del> .
	•	CONNECT: Jumper wire, between the Motronic Engine Control Module Power Supply Relay -J271- socket terminals 30 and 87.	<b>-</b>	NO: GO TO: Step 5 <del>⇒ page 710</del> .
	•	IGNITION: ON.		
	•	CHECK: Engine/Motor Control Module -J623-harness connector T94 / 3 and T94 / 5 to ground for voltage.		
	•	IGNITION: OFF.		
	•	SPECIFIED VALUE: Battery voltage.		
	_	Were Values obtained?		
4	•	REMOVE: Jumper wire, between the Motronic Engine Control Module Power Supply Rejudy -J271- socket terminals 30 and 87.	<b>→</b>	YES: REPLACE: Motronic Engine Control Module Power Supply Relay -J271 Refer to appro-
	•	5K1 (from May 2009): CHECK: Motronic Engine Control Module Power Supply Relay - J271- socket terminal 86 to the Engine/Motor Control Module -J623- harness connector T94 69 for resistance.	* - *	GO TO: Step 6 ⇒ page 711 .  NO: PERFORM: Visual Inspection of wiring and component.
	• , , , , ,	All others: CHECK: Motronic Engine Control Module Power Supply Relay -J271- socket terminal 85 to the Engine/Motor Control Module -J623- harness connector T94 / 69 for re-	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	orin <sub>M</sub>	sistance.	•	REPAIR: Faulty wiring or connector.
	part (	SPECIFIED VALUE: $0.5 \Omega$ (± $0.3 \Omega$ ). Was Value obtained?	•	GO TO: Step 6 <del>⇒ page 711</del> .
5	purposee, in	REMOVE: Jumper wire, between the Motronic Engine Control Module Power Supply Relay -J271- socket terminals 30 and 87.	<u>-</u>	YES: REPLACE: Fuse panel. Refer to appropriate repair manual.
	Prorial	REMOVE: Appropriate fuse (refer to appropriate wiring diagram for correct fuse).	•	GO TO: Step 6 <u>⇒ page 711</u> . NO:
	•	CHECK: Downstream (output) side of Appropriate fuse to the Engine/Motor Control Module, J623- harness connector T94 / 3 and	<b>*</b>	PERFORM: Visual Inspection of wiring and component.
		T94 \$5 for resistance (refer to appropriate wiring diagram for correct fuse).	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	•	SPECIFIÉD VALUE: $0.5 \Omega (\pm 0.3 \Omega)$ .	<b>♦</b>	REPAIR: Faulty wiring or connector.
	_	Were Values obtained?	MSY	GO TO: Step 6 <u>⇒ page 711</u> .



Step Procedure	Result / Action to Take			
<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	<ul> <li>YES:</li> <li>◆ CHECK: Engine/Motor Control Module -J623- harness connector for any damaged, pushed- out pins.</li> </ul>			
Dece the original Directains.	♦ REPAIR: As necessary.			
	♦ If all electrical connections are OK:			
	◆ REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.			
	◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.			
	<ul> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15</li> </ul>			
	♦ Return vehicle to Customer.			
	<ul> <li>NO:</li> <li>◆ Perform the diagnostic procedure for any DTC's.</li> </ul>			
	♦ If no DTC's return, the repair is complete.			
	♦ Return vehicle to customer.			
General Description  General Description  The ambient or Outside Air Temperature Sensor - G17- is a negative temperature coefficient (NTC) sensor that informs the semiautomatic / automatic temperature control system of outside air temperature. An NTC sensor resistance decreases as the temperature increases, and the sensor resistance increases as the temperature decreases. The computer uses this input along with different in-car temperature sensors to control temperature and blower speed. When there is a problem with this sensor, performance will suffer and the A/C compressor clutch may not engage.  Note  The connector called out in this pinpoint is T32 in some of the wehicles and T32c in others. For simplicity, T32 only is used.  Special tools and workshop equipment required  Multimeter.  Wiring Diagram.  Scan Tool.  Test requirements  Fuses OK.  Battery voltage OK.  Switch OFF all electrical and electronic accessories.  Vehicles with automatic transmission, ensure the selector lever position is in "P".				
Special tools and workshop equipment required  ♦ Multimeter.  ♦ Wiring Diagram.  • Scan Tool.  Test requirements  • Fuses OK.  • Battery voltage OK.  • Switch OFF all electrical and electronic accessories.				
Wiring Diagram.				
♦ Scan Tool.				
Test requirements	July .			
• Fuses OK.	W. Coby.			
Battery voltage OK.  40  40  40  40  60  60  60  60  60  60	O V VO XION			
Switch OFF all electrical and electronic accessories	S. DA Nagen AG.			
<ul> <li>Vehicles with automatic transmission, ensure the s lever position is in "P".</li> </ul>	elector			

#### 3.6.21 Outside Air Temperature Sensor -G17-, Checking

#### **General Description**



#### Note

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".





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- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions:  $\Rightarrow$  P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", <u>page 4</u> .

2 • IG  - Wi  2 • IG  • DII  Se  • CH  Gr  for  • SF  - Wi  3 • RE  • CH  Gr  str  ne  • SF  - Wi  - Wi  str  ne	PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.  Was Complaint verified?  GNITION: OFF.  DISCONNECT: Outside Air Temperature Sensor -G17- harness connector.  CHECK: Outside Air Temperature Sensor -G17- component connector terminals 1 to 2 for resistance.  SPECIFIED VALUE: 1,300 Ω (+/- 500 Ω @ approx. 20° C).  Was Value obtained?  REMOVE: Instrument Cluster Control Module J285 Refer to appropriate repair manual.  CHECK: Outside Air Temperature Sensor -	
OLI Se  CH G1 for  SF ap  W3  RE -J2  CH G1 str ne  CH G1 str ne  SF  W1  VI vivo trad ui sessoon	DISCONNECT: Outside Air Temperature Sensor -G17- harness connector.  CHECK: Outside Air Temperature Sensor -G17- component connector terminals 1 to 2 for resistance.  SPECIFIED VALUE: 1,300 Ω (+/- 500 Ω @ approx. 20° C).  Was Value obtained?  REMOVE: Instrument Cluster Control Module J285 Refer to appropriate repair manual.	<ul> <li>GO TO: Step 3 ⇒ page 712.</li> <li>NO:</li> <li>REPLACE: Outside Air Temperature Sensor -G17 Refer to appropriate repair manual.</li> <li>GO TO: Step 4 ⇒ page 713.</li> </ul>
• Ch Gristr ne • Ch Gristr ne • SF – Wind part of the deliverage of the state of th	J285 Refer to appropriate repair manual.	
	G17- harness connector terminal 1 to the Instrument Cluster Control Module -J285- harness connector T32 / 20 for resistance. CHECK: Outside Air Temperature Sensor -G17- harness connector terminal 2 to the Instrument Cluster Control Module -J285- harness connector T32 / 19 for resistance. SPECIFIED VALUE: $0.5~\Omega~(\pm~0.3~\Omega)$ . Were Values obtained?	<ul> <li>TIP: The Outside Air Temperature Sensor - G17- may fail under loaded operation; please swap a known good Outside Air Temperature Sensor G17- prior to continuing to the next step.</li> <li>GO TO: Step 4 page 713.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 4 page 713.</li> </ul>





Step	Procedure	Result / Action to Take
4	Perform a road test to verify repair.  Does the original DTC return?  Does the original DTC return?  Original DTC return?  Original DTC return?  Original DTC return?	<ul> <li>YES:</li> <li>◆ CHECK: Instrument Cluster Control Module</li> <li>J285- harness connector for any damaged,</li> <li>pushed-out pins.</li> </ul>
	, <sub>by</sub> Volkswagen AG. Volkswagen AG doe	REPAIR: As necessary.
	polised by	◆ If all electrical connections are OK:
	, admes sauth	REPLACE: Instrument Cluster Control Module -J285-: Refer to appropriate repair manual.
		◆ Clear the DTC's: Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22 .
	Mole, is,	Repair is complete. Generate Readiness Code. Refer to <u>⇒ C3.2 ode", page 15</u> .
	ring	◆ Return vehicle to Customer.
	88)	- NO: ◆ Perform the diagnostic procedure for any DTC's.
	sod	♦ If no DTC's return, the repair is complete.
	roial bur	Return vehicle to customer.

#### Oxygen Sensor 1 After Catalytic Con-3.6.22 verter - GX7-, Checking

## General Description

The Oxygen Sensor 1 After Catalytic Converter - CX7- is positioned downstream of the primary catalytic converter and it supplies the Engine/Motor Control Module -J623- with a voltage signal (nonlinear) indicating a "rich" or a "leas" of the control of the contr present. If the primary catalytic converter is supersaturated with oxygen (indicating a lean mixture is present), the Oxygen Sensor 1 After Catalytic Converter -GX7- will send the Engine/Motor Control Module -J623- a nonlinear signal indicating the lean mixture condition. The mixture is then enriched with fuel until the oxygen has been "displaced" from the catalytic converter. This new condition, in turn, is registered by the Oxygen Sensor 1 After Catalytic Converter -GX7- as a nonlinear signal indicating the rich mixture condition. The mixture is then leaned out by the Engine/Motor Control Module -J623-. If the nonlinear signal is received again, the mixture will again be enriched. The frequency, or period, during which the mixture is enriched or leaned out is variable, being dependent on the gas flow rate (engine load) at that moment.

Note the Oxygen Sensor 1 After Catalytic Converter -GX7- is also known as the Oxygen Sensor After Three Way Catalytic Converter -G130-.

The Oxygen Sensor 1 After Catalytic Converter -GX7- contains the following components:

- Oxygen Sensor After Three Way Catalytic Converter -G130-.
- Heater For Oxygen Sensor 1 After Catalytic Converter -Z29-.

The Oxygen Sensor 1 After Catalytic Converter -GX7- components cannot be serviced separately, and they must be serviced as a unit.

Special tools and workshop equipment required

Nolkswagen AG. Volkswagen AG does not guarantee. Jetta, Jetta SportWagen, Golf, Passat 2010 ➤ Generic Scan Tool - Edition 07,2022

- Multimeter.
- Wiring Diagram.
- Scan Tool.

#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4

Step	Procedure ***	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to Oxygen Sensor Preliminary Tests in ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 page 714.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Oxygen Sensor 1 After Catalytic Converter -GX7- harness connector.</li> <li>CHECK: Oxygen Sensor 1 After Catalytic Converter -GX7- component connector terminals 1 to 2 for resistance.</li> <li>SPECIFIED VALUE: 2 – 4 Ω (+/- 0.5 Ω @ 25° C).</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 3 ⇒ page 714.</li> <li>NO:</li> <li>REPLACE: Oxygen Sensor 1 After Catalytic Converter -GX7 Refer to appropriate repair manual.</li> <li>GO TO: Step 6 ⇒ page 715.</li> </ul>
3	<ul> <li>IGNITION: ON.</li> <li>CHECK: Oxygen Sensor 1 After Catalytic Converter -GX7- harness connector terminal 1 to ground for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: Battery voltage.</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 4 ⇒ page 715.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 6 ⇒ page 715.</li> </ul>



Step	Procedure	Result / Action to Take
4	RECONNECT: Oxygen Sensor 1.	Q-
	lytic Converter -GX7- harness con	→ FAULT: Is intermittent.
	CONNECT: Scan Tool.	<ul> <li>PERFORM: Visual Inspection of wiring and component.</li> </ul>
	START: Engine and let Idle.	
	Perform the function test located i tic mode 06. Refer to appropriate Mode 06 - Read Test Results for S	Diagnostic Specific Di-
	agnostic Functions, ⇒ M33 odes (	
	• IGNITION: OFF.	◆ GO TO: Step 6 <u>⇒ page 715</u> .
	SPECIFIED VALUE: Mode 6 Pass	- NO: ◆ GO TO: Step 5 <u>⇒ page 715</u> .
	– Were Values obtained?	
5	DISCONNECT: Oxygen Sensor 1     lytic Converter -GX7- harness con     DEMOVE: Engine (Motor Control N	nector. REPLACE: Oxygen Sensor 1 After Catalytic Converter -GX7 Refer to appropriate repair
	<ul> <li>REMOVE: Engine/Motor Control N J623 Refer to appropriate repair</li> </ul>	manual.
	CHECK: Oxygen Sensor 1 After C	
	Converter -GX7- harness connect 2 to the Engine/Motor Control Mod harness connector T94 / 7 for resi • CHECK: Oxygen Sensor 1 After C	or terminal dule J623- stance component.    NO:  PERFORM: Visual Inspection of wiring and component.
	CHECK: Oxygen Sensor 1 After C Converter -GX7- harness connect 3 to the Engine/Motor Control Mod harness connector T94 / 72 for res	or terminal short or harness connector for damage, cordule -J623- rosion, loose or broken terminals.
	CHECK: Oxygen Sensor 1 After C	♦ REPAIR: Faulty wiring or connector.
	Converter -GX7- harness connect 4 to the Engine/Motor Control Mod harness connector T94 / 84 for res	dule -J623-
	• SPECIFIED VALUE: 0.5 Ω (± 0.3	Ω).
	– Were Values obtained?	
6	Final Procedure	<ul><li>YES:</li><li>◆ CHECK: Engine/Motor Control Module -J623-</li></ul>
	<ul> <li>Perform a road test to verify repair</li> <li>Does the original DTC return?</li> </ul>	harness connector for any damaged, pushed- out pins.
		◆ REPAIR: As necessary.
		◆ If all electrical connections are OK:
		◆ REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
		◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.
		<ul> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15</li> </ul>
		◆ Return vehicle to Customer.
		<ul> <li>NO:</li> <li>◆ Perform the diagnostic procedure for any DTC's.</li> </ul>
		♦ If no DTC's return, the repair is complete.
		♦ Return vehicle to customer.



#### 3.6.23 Oxygen Sensor 1 Before Catalytic Converter - GX10-, Checking

#### **General Description**

The Oxygen Sensor 1 Before Catalytic Converter -GX10- does not actually measure oxygen concentration, but rather the difference between the amount of oxygen in the exhaust gas and the amount of oxygen in the air. A rich mixture causes an oxygen demand. This demand causes a voltage to build up, due to transportation of oxygen ions through the Oxygen Sensor 1 Before Catalytic Converter -GX10- layer. A lean mixture causes a low voltage, since there is an oxygen excess. The Oxygen Sensor 1 Before Catalytic Converter -GX10- and catalytic converters are used in order to reduce exhaust emissions. Information on oxygen concentration is sent to the Engine/Motor Control Module -J623-, which adjusts the amount of fuel injected into the engine to compensate for excess air or excess fuel. The Engine/Motor Control Module -J623- attempts to maintain, on average, a certain air-fuel ratio by interpreting the information it gains from the Oxygen Sensor 1 Before Catalytic Converter -GX10-. The primary goal is a compromise between power, fuel economy, and emissions. The heater for the Oxygen Sensor 1 Before Catalytic Converter -GX10- is designed to minimize the time-to-readiness for closed-loop operation by heating the Oxygen Sensor 1 Before Catalytic Converter -GX10- as quickly as possible.

The Oxygen Sensor 1 Before Catalytic Converter -GX10- contains the following components:

- Heated Oxygen Sensor -G39-.
- Oxygen Sensor Heater -Z19-.

The Oxygen Sensor 1 Before Catalytic Converter -GX10- components cannot be serviced separately, and they must be serviced as a unit.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4.





Step	Procedure	Result / Action to Take
1	PERFORM: Preliminary Check to verify the customers complaint. Refer to Oxygen Sensor Preliminary Tests in ⇒ C3.1 heck", page 14.	- YES:  ◆ GO TO: Step 2 ⇒ page 717.  - NO:wagen AG. Volkswagen AG does
	- Was Complaint verified?  - Was Complaint verified?	GATHER more information from customer about the complaint.
2	IGNITION: OFF.	- YES:
	DISCONNECT: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector.	<ul> <li>◆ GO TO: Step 3 ⇒ page 717.</li> <li>NO:</li> <li>◆ REPLACE: Oxygen Sensor 1 Before Catalytic Converter -GX10 Refer to appropriate re-</li> </ul>
	CHECK: Oxygen Sensor 1 Before Catalytic Converter -GX10- component connector ter- minals 3 to 4 for resistance.	pair manual.  ♦ GO TO: Step 6 <u>⇒ page 718</u> .
	• SPECIFIED VALUE: 2 – 4 Ω (+/- 0.5 Ω @ 25° C).	
	- Was Value obtained?	VEO
3	• IGNITION: ON.	<ul> <li>YES:</li> <li>GO TO: Step 4 ⇒ page 717.</li> </ul>
	CHECK: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector terminal 4 to ground for voltage.	
	• IGNITION: OFF.	◆ CHECK: Wiring for open, high resistance,
	<ul> <li>SPECIFIED VALUE: Battery voltage.</li> <li>Was Value obtained?</li> </ul>	short or harness connector for damage, corrosion, loose or broken terminals.
	**************************************	REPAIR: Faulty wiring or connector.
	- Was Value obtained?	◆ GO TO: Step 6 ⇒ page 718.
4	RECONNECT: Oxygen Sensor 1 Before Cat- alytic Converter -GX10- harness connector.	<ul> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 6 ⇒ pade 718.</li> <li>✓ YES:</li> <li>FAULT: Is intermittent: u=052NSXION</li> <li>PERFORM: Visual Inspection of wiring and component.</li> </ul>
	CONNECT: Scan Tool.	◆ PERFORM: Visual Inspection of wiring and
	START: Engine and let Idle.	
	Perform the function test located in diagnostic mode 06. Refer to appropriate Diagnostic Mode 06 - Read Test Results for Specific Di-	◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	agnostic Functions, ⇒ M3.3 odes 01 – 0A", page 17	◆ REPAIR: Faulty wiring or connector.
	• IGNITION: OFF.	♦ GO TO: Step 6 <u>⇒ page 718</u> .
	SPECIFIED VALUE: Mode 6 Pass.	<ul> <li>NO:</li> <li>GO TO: Step 5 ⇒ page 718 .</li> </ul>
	- Were Values obtained?	→ 20 10. σιορ σ <u>→ ράθο 7 10</u> .



Step	Procedure	Result / Action to Take
5	DISCONNECT: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector.	<ul> <li>YES:</li> <li>◆ REPLACE: Oxygen Sensor 1 Before Catalytic Converter -GX10 Refer to appropriate repair manual.</li> </ul>
	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	◆ GO TO: Step 6 <u>⇒ page 718</u> .
	<ul> <li>CHECK: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector terminal 1 to the Engine/Motor Control Module -J623- harness connector T94 / 78 for resistance.</li> <li>CHECK: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T94 / 79 for resistance.</li> <li>CHECK: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector terminal 3 to the Engine/Motor Control Module -J623- harness connector T94 / 73 for resistance.</li> <li>CHECK: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector terminal 5 to the Engine/Motor Control Module -J623- harness connector T94 / 56 for resistance.</li> <li>CHECK: Oxygen Sensor 1 Before Catalytic Converter -GX10- harness connector terminal 6 to the Engine/Motor Control Module -J623- harness connector T94 / 57 for resistance.</li> </ul>	<ul> <li>NO:</li> <li>◆ PERFORM: Visual Inspection of wiring and component.</li> <li>◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, cor-</li> </ul>
	<ul> <li>SPECIFIED VALUE: 0.5 Ω ( ± 0.3 Ω).</li> <li>Were Values obtained?</li> </ul>	
6	Final Procedure     Perform a road test to verify repair.      Does the original DTC return?  Perform a road test to verify repair.  Poes the original DTC return?	<ul> <li>CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.</li> <li>REPAIR: As necessary.</li> <li>If all electrical connections are OK:</li> <li>REPLACE: Engine/Motor Control Module -J623 Refer to appropriate repair manual.</li> <li>Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 - Erase DTC Memory", page 22.</li> <li>Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.</li> <li>Return vehicle to Customer.</li> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> <li>If no DTC's return, the repair is complete.</li> <li>Return vehicle to customer.</li> </ul>
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718	Dec 0.01 Occasiones Test	



#### 3.6.24 Secondary Air Injection Pump Relay -J299- / Secondary Air Injection Pump Motor - V101-, Checking

#### **General Description**

The secondary air injection system injects air into the exhaust using passages in the cylinder head. This extra air injection takes place using the Secondary Air Injection Pump Motor -V101- that is powered by the Secondary Air Injection Pump Relay -J299- on a cold-start of the engine for about 45 – 100 s and serves to quickly heat the catalytic converter(s) for improved

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: <u>⇒ P1.1 recautions</u>", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", page 4

### **Test Procedure**



Note

The engine MUST be cold (room temperature) in order for the ÈCM to command the air pump relay ON. The pump runs for approximately 20 – 100 seconds. Once the engine has been started, the ECM may not command the pump to run again for approx 6-8 hrs of engine off time. Due to potential damage to the catalyst, the generic scan tool has no provision for SAI relay control.

Step	Procedure	Result / Action to Take
Step 1 •	PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.	- YES: \$\\ \$\Displays \text{ GO TO: Step 2 \(\Rightarrow\) page 720}\\ - \text{NO:}\$
-	Was Complaint verified?	GATHER more information from customer about the complaint.
31/d 40/00	Was Complaint verified?  Was Complaint verified?  Was Complaint verified?	Jurdo Diagraphical Company of the Co





Step		Procedure		Result / Action to Take
2	•	IGNITION: OFF.	-	YES:
	•	REMOVE: Secondary Air Injection Pump Relay -J299- from fuse box. Refer to appropriate repair manual.	* - *	GO TO: Step 3 <u>⇒ page 720</u> .  NO: PERFORM: Visual Inspection of wiring and
		IGNITION: ON.		component.
	•	162 (from Apr 2010): CHECK: Secondary Air Injection Pump Relay -J299- socket terminals 30 and 85 to ground for voltage.	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	•	All others: CHECK: Secondary Air Injection Pump Relay -J299- socket terminals 30 and 86 to ground for voltage.	•	REPAIR: Faulty wiring or connector.  GO TO: Step 6 <u>⇒ page 721</u> .
		IGNITION: OFF.	olks	Wagon 4
		SPECIFIED VALUE: Battery voltage.	Jito	wagen AG does not c
	_	IGNITION: OFF.  SPECIFIED VALUE: Battery voltage.  Were Values obtained?		guarantee.
3	•	CONNECT: Jumper wire, between the Secondary Air Injection Pump Relay -J299- socket terminals 30 and 87.	<b> </b> _	YES:
		IGNITION: ON	<b>-</b>	NO: GO TO: Step 5 <u>⇒ page 720</u> .
		SPECIFIED VALUE: Secondary Air Injection Pump Motor-V101- should be heard running.	ľ	ittl with respect to the
		IGNITION: OFF.		aspe
	_	Was Value obtained?	V	ct to th
4	•	DISCONNECT: Jumper wire, between the	_	YES:
		Secondary Air Injection Pump Relay -J299- socket terminals 30 and 87.	•	REPLACE: Secondary Air Injection Pump Relay -J299 Refer to appropriate epair manual.
	•	REMOVE Engine/Motor Control Module - J623 Refer to appropriate repair manual.	*	GO TO: Step 6 ⇒ page 721 .
	•	162 (from Apr 2010): CHECK: Secondary Air Injection Pump Relay -J299- socket termi- nal 86 to the Engine/Motor Control Module -J623- harness connector T94 / 94 for resist-	<b>→</b>	NO: PERFORM: Visual Inspection of wiring and component.
		ance.  All others: CHECK? Secondary Air Injection	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
		Pump Relay -J299- socket terminal 85 to the Engine/Motor Control Module -J623- harness connector T94 / 94 for resistance.	•	REPAIR: Faulty wiring or connector.
		SPECIFIED VALUE: 0.5 $\Omega$ ( $\pm$ 0.3 $\Omega$ )	•	GO TO: Step 6. ⇒ page 721 .
		Was Value obtained?		. ĐA nguọi.
5	•	DISCONNECT: Jumper wire, between the Secondary Air Injection Pump Relay -J299-socket terminals 30 and 87.	<b>-</b>	YES: REPLACE: Secondary Air Injection Pump Motor -V101 Refer to appropriate repair
	•	DISCONNECT: Secondary Air Injection Pump Motor -V101- harness connector.	<b>*</b>	manual. GO TO: Step 6 <u>⇒ page 721</u> .
	•	CHECK: Secondary Air Injection Pump Relay -J299- socket terminal 87 to the Secondary Air Injection Pump Motor -V101- harness connector terminal 2 for resistance.		NO: PERFORM: Visual Inspection of wiring and component.
	•	CHECK: Secondary Air Injection Pump Motor -V101- harness connector terminal 1 to ground for resistance.		CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
		SPECIFIED VALUE: $0.5 \Omega (\pm 0.3 \Omega)$ .		REPAIR: Faulty wiring or connector.
	_	Were Values obtained?	•	GO TO: Step 6 <u>⇒ page 721</u> .



Step	Procedure	Result / Action to Take
6	<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	<ul> <li>YES:</li> <li>◆ CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushedout pins.</li> </ul>
		♦ REPAIR: As necessary.
		◆ If all electrical connections are OK:
		◆ REPLACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
	Nolkswagen AG. Volksw	Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.
	authorised by Vo	◆ Repair is complete. Generate Readiness Code. Refer to <u>⇒ C3.2 ode", page 15</u> .
	, like s	Return vehicle to Customer.
	on the state of the sea of the se	<ul> <li>NO:</li> <li>Perform the diagnostic procedure for any DTC's.</li> </ul>
	, , , , , , , , , , , , , , , , , , ,	♦ If no DTC's return, the repair is complete.
	Who	♦ Return vehicle to customer.
3.6.2	и	he correctness o
Gener	ral Description	f info
on a conductory quickly A presenthis sy 1-G60	econdary air injection system injects air into the extole- old-start of the engine for 45 – 100 s and serves to y heat the catalytic converter(s) for improved emissions based secondary air diagnostic function is us estem, the signal from the Secondary Air Injection Solds is evaluated by the Engine/Motor Control Modu. The injected air quantity is determined from the pro-	sions. ed. In Sensor ile -
Specia	al tools and workshop equipment required	Vertering
♦ Mu	al tools and workshop equipment required litimeter.	.JONKSURGEN AG.
	ring Diagram.	
♦ Sca	an Tool.	
Test re	equirements	
• Fus	ses OK.	

#### Secondary Air Injection Sensor 1 -3.6.25 G609-, Checking

#### **General Description**

# Special tools and workshop equipment required Protectedby

- Multimeter.
- Wiring Diagram.
- ♦ Scan Tool.

#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", <u>page 4</u> .



Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 722.</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Secondary Air Injection Sensor 1 -G609- harness connector</li> <li>IGNITION: ON.</li> <li>CHECK: Secondary Air Injection Sensor 1 -G609- harness connector terminals 1 to 3 for voltage.</li> <li>IGNITION: OFF.</li> <li>SPECIFIED VALUE: About 5.0 V.</li> <li>Was Value obtained?</li> </ul>	- YES:  \$ ✓ GO TO: Step 3 ⇒ page 722 .  - NO:  • GO TO: Step 4 ⇒ page 723 .
3	<ul> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>1K2, 162 (early build from Apr 2010), AJ5 (to Jun 2012), 5K1, A32 (to Nov 2011): CHECK: Secondary Air Injection Sensor 1 - G609- harness connector terminal 4 to the Engine/Motor Control Module -J623- harness connector T60 / 55 for resistance.</li> <li>162 (2011 late build), AJ5 (from Jul 2012), A32 (from Nov 2011): CHECK: Secondary Air Injection Sensor 1 - G609- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T60 / 55 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>REPLACE: Secondary Air Injection Sensor 1 -G609 Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 723.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 5 ⇒ page 723.</li> </ul>



[	Step	Procedure	Result / Action to Take
	4	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	<ul> <li>YES:</li> <li>GO TO: Step 5 ⇒ page 723 .</li> </ul>
		<ul> <li>1K2, 162 (early build from Apr 2010), AJ5 (to Jun 2012), 5K1, A32 (to Nov 2011): CHECK: Secondary Air Injection Sensor 1 -G609- har- ness connector terminal 1 to the Engine/Mo- tor Control Module -J623- harness connector T60 / 13 for resistance.</li> </ul>	<ul> <li>NO:</li> <li>◆ PERFORM: Visual Inspection of wiring and component.</li> <li>◆ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> </ul>
		<ul> <li>1K2, 162 (early build from Apr 2010), AJ5 (to Jun 2012), 5K1, A32 (to Nov 2011): CHECK: Secondary Air Injection Sensor 1 -G609- har- ness connector terminal 3 to the Engine/Mo- tor Control Module -J623- harness connector T60 / 44 for resistance.</li> </ul>	<ul> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 5 ⇒ page 723.</li> </ul>
	ي .	162 (2011 late build), AJ5 (from Jul 2012), A32 (from Nov 2011): CHECK: Secondary Air Injection Sensor 1-G609-harness connector terminal 1 to the Engine/Motor Control Module -J623- harness connector T60 / 44 for resistance.	
is is not berner.	Heduniess	<ul> <li>ule -J623- harness connector 160 / 44 for resistance.</li> <li>162 (2011 late build), AJ5 (from Jul 2012), A32 (from Nov 2011): CHECK: Secondary Air Injection Sensor 1 -G609- harness connector terminal 3 to the Engine/Motor Control Module -J623- harness connector T60 / 13 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Were Values obtained?</li> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	ced and liability with respect to t
whole		• SPECIFIED VALUE: $0.5~\Omega~(\pm~0.3~\Omega)$ .	espec
orin		– Were Values obtained?	stot
ooses, in part	5	<ul><li>Final Procedure</li><li>Perform a road test to verify repair.</li><li>Does the original DTC return?</li></ul>	► YES: ©     CHECK Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins
al puri			♦ REPAIR: As necessary.
merci			If all electrical connections are OK:
Orcom			◆ REPEACE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.
976	11010		◆ Clear the DTC's. Refer to <u>⇒ M3.3.4 ode 04 –</u> <u>Erase DTC Memory", page 22</u> .
	CHIAG	O Wildow	Repair is complete. Generate Readiness Code. Refer to <u>&gt; C3.2 ode</u> ", page 15.
		ADIMOQUE TO THE MANUEL TO A STATE OF THE PROPERTY OF THE PROPE	◆ Return vehicle to Customer.
		Protected by Copyrights Och Parights Copyrights Copyrig	<ul><li>NO:</li><li>◆ Perform the diagnostic procedure for any DTC's.</li></ul>
			♦ If no DTC's return, the repair is complete.
			Return vehicle to customer.

#### Secondary Air Injection Solenoid Valve 3.6.26 - N112-, Checking

# **General Description**

The secondary air injection system injects air into the exhaust on a cold-start of the engine for about  $45-100\,\mathrm{s}$ . and serves to



quickly heat the catalytic converter(s) for improved emissions. A "pressure based secondary air diagnostics" function is used. In this system, the Engine/Motor Control Module -J623- controls the Secondary Air Injection Solenoid Valve -N112-, which allows the air quantity necessary to be injected into the exhaust.

#### Special tools and workshop equipment required

- Multimeter.
- Wiring Diagram.
- Scan Tool.

#### Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions", Solidations,

  Olkswagen AG. Volkswagen AG does not guarant <u>page 4</u> .

Step	Procedure Equition	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 724 .</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	<ul> <li>IGNITION: OFF.</li> <li>DISCONNECT: Secondary Air Injection Solenoid Valve -N112- harness connector.</li> <li>CHECK: Secondary Air Injection Solenoid Valve -N112- component connector terminals 1 to 2 for resistance.</li> <li>SPECIFIED VALUE: 5 – 35 Ω (@ approx. 20° C).</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 3 ⇒ page 724.</li> <li>NO:</li> <li>REPLACE: Secondary Air Injection Solenoid Valve -N112 Refer to appropriate repair manual.</li> <li>GO TO: Step 5 ⇒ page 725.</li> </ul>
3	IGNITION: ON.     CHECK: Secondary Air Injection Solenoid Valve -N112- harness connector terminal 1 to ground for voltage.     IGNITION: OFF.     SPECIFIED VALUE: Battery voltage.  - Was Value obtained?	<ul> <li>YES:</li> <li>GO TO: Step 4 ⇒ page 725.</li> <li>NO:</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 5 ⇒ page 725.</li> </ul>



Step		Procedure		Result / Action to Take
4	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.  5K1: CHECK: Secondary Air Injection Solenoid Valve -N112- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T94 / 48 for resist-	<b>-</b>	YES: TIP: The Secondary Air Injection Solenoid Valve -N112- may fail under loaded operation; please swap a known good Secondary Air Injection Solenoid Valve -N112- prior to continuing to the next step.
	<ul> <li>REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.</li> <li>5K1: CHECK: Secondary Air Injection Solenoid Valve -N112- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T94 / 48 for resistance.</li> <li>All others: CHECK: Secondary Air Injection Solenoid Valve -N112- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T60 / 48 for resistance.</li> <li>SPECIFIED VALUE: 0.5 Ω (± 0.3 Ω).</li> <li>Was Value obtained?</li> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Does the original DTC return?</li> </ul>	GO TO: Step 5 <u>⇒ page 725</u> .		
	•	Solenoid Valve -N112- harness connector terminal 2 to the Engine/Motor Control Modelks	•	NO: PERFORM: Visual Inspection of wiring and component.
		sistance.	•	CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	_	1055	<b>♦</b>	REPAIR: Faulty wiring or connector.
			•	GO TO: Step 5 <del>⇒ page 725</del> .
5		Perform a road test to verify repair.  Does the original DTC return?	- • • • • • • • • • • • • • • • • • • •	YES: CHECK: Engine/Motor Control Module -J623-harness connector for any damaged, pushed-out pins.  REPAIR: As necessary.  If all electrical connections are OK: REPLACE: Engine/Motor Control Module -J623 Refer to appropriate repair manual.  Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22  Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15  Return vehicle to Customer.  NO: Perform the diagnostic procedure for any DTC's.  If no DTC's return, the repair is complete.  Return vehicle to customer.

#### Three Way Catalytic Converter (TWC), 3.6.27 Checking

### **General Description**

A catalytic converter is a vehicle emissions control device that converts toxic pollutants in exhaust gas to less toxic pollutants by catalyzing a redox reaction (oxidation or reduction). Catalytic converters are used in internal combustion engines.

#### General recommendations

Oxygen sensors OK.

No leaks or damage to exhaust system.

Prior to repair work, perform a preliminary check to verify the condition. Refer to  $\Rightarrow$  C3.1 heck", page 14.



#### **Test requirements**

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.
- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: <u>⇒ P1.1 recautions</u>", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions",

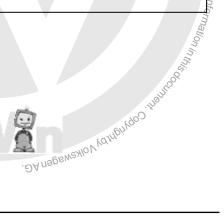
#### **Test Procedure**

Step	Procedure	Result / Action to Take
1	Activate Monitors:  • Perform the function test in Diagnostic Mode 06. Refer to appropriate Diagnostic Mode 06 - Read Test Results for Specific Diagnostic Functions, ⇒ M3.3 odes 01 – 0A", page 17.  • End diagnosis and switch the ignition off.  • If the specified values are exceeded:	<ul> <li>Check the exhaust system for leaks.</li> <li>If necessary, repair the leak(s) in the exhaust system.</li> <li>GO TO: Step 2 ⇒ page 726.</li> </ul>
2	<ul> <li>O2 Sensor Monitoring:         <ul> <li>Erase the DTC memory. Refer to ⇒</li> <li>M3.3.4 ode 04 – Erase DTC Memory", page 22 .</li> </ul> </li> <li>Perform a road test to verify repair.</li> <li>If the DTC does not return:</li> </ul>	<ul> <li>◆ Generate readiness code. Refer to ⇒ C3.2 ode", page 15</li> <li>◆ If no leaks are found in the exhaust system:</li> <li>◆ Replace the catalytic converter with front exhaust pipe. Refer to appropriate repair manual.</li> <li>◆ GO TO: Step 3 ⇒ page 726</li> </ul>
3	Final procedure:     Perform a road test to verify epair.  Perform a road test to verify epair.	<ul> <li>After the repair work, the following work steps must be performed in the following sequence:</li> <li>Check the DTC memory. Refer to ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.</li> <li>If necessary, erase the DTC memory. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22.</li> <li>If the DTC memory was erased, generate readiness code. Refer to ⇒ C3.2 ode", page 15.</li> <li>Return vehicle to Customer.</li> </ul>

#### 3.6.28 Throttle Valve Control Module - GX3 / J338-, Checking

#### **General Description**

The throttle valve operation occurs by an electric motor identified as the EPC Throttle Drive -G186- located within the Throttle Valve Control Module -GX3-. It is controlled by the Engine Module -GX3-. tor Control Module -J623- with primary inputs from the Acceler ator Pedal Module -GX2- as well as other peripheral inputs from the EPC Throttle Drive Angle Sensor 1 -G187- (5K1) or the





Throttle Position Sensor (669- (all others) and the EPC Throttle Drive Angle Sensor 2-G188-.

- ◆ EPC Throttle Drive Angle Sensor 2 -G188-.

## Special tools and workshop equipment required

#### Test requirements

Drive A	ingle Sensor 2 G188	Guarans
Note thas the	ne Throttle Valve Control Module -GX3- is also refe Throttle Valve Control Module -J338	erred to
The Th	rottle Valve Control Module -GX3 / J338- contains	s the Ray
♦ EP	Throttle Drive -G186	
♦ EPC	C Throttle Drive Angle Sensor 1 -G187- (5K1).	m rest
♦ £hr	ottle Position Sensor -G69- (All others).	pectt
♦ EPO	C Throttle Drive Angle Sensor 2 -G188	the the
The Th cannot unit.	angle Sensor 2-G188  The Throttle Valve Control Module -GX3- is also referentiate Valve Control Module -J338  Throttle Valve Control Module -GX3 / J338- contains a components:  Throttle Drive -G186  Throttle Drive Angle Sensor 1 -G187- (5K1).  Throttle Drive Angle Sensor 2 -G188  Throttle Drive Angle Sensor 2 -G188  Tottle Valve Control Module -GX3 / J338- components be serviced separately, and they must be serviced timeter.  It tools and workshop equipment required timeter.  Tool.  quirements  Tool.  quirements  Tool.  Throttle Drive Angle Sensor 2 -G188  Throttle Valve Control Module -GX3 / J338- components be serviced separately, and they must be serviced timeter.  Throttle Valve Control Module -GX3 / J338- components be serviced separately.  Throttle Valve Control Module -GX3 / J338- components be serviced separately.  Throttle Drive Angle Sensor 2 -G188  Throttle Drive Angle Sensor 2	ents d as a
Specia	I tools and workshop equipment required	S of ir
♦ Mul	timeter.	nfo <sub>rm</sub>
♦ Wigi	ng Diagram.	ation
♦ Sca	n Tool.	in the last of the
Test re	quirements	, ES
• Fus	es OKu	in the state of th
• Batt	ery voltage OK.	JURINAO S
• Swi	tch OFF all electrical and electronic accessories	Ver
<ul> <li>Veh leve</li> </ul>	icles with automatic transmission, ensure the select position is in "P".	ector
	icles with manual transmission, ensure the shifter ition is in "N" with the parking brake applied.	lever
• Obs	serve all safety precautions: ⇒ P1.1 recautions", p	<u>age 2</u> .
	w clean working conditions: <del>⇒ W1.2 orking Condit</del> <u>e 4</u> .	i <mark>ons",</mark>
Test P	rocedure	
Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 728 .</li> <li>NO:</li> </ul>
	– Was Complaint verified?	GATHER more information from customer about the complaint.
	<u> </u>	



Step		Procedure		Result / Action to Take	]
2	•	IGNITION: OFF.	<u>-</u>	YES: CONDITION: May be intermittent.	]
	•	CONNECT: Scan Tool.	ľ	PERFORM: Visual Inspection of wiring and	
	•	IGNITION: ON.		component.	
	•	CHECK: Throttle valve position closed:	•	CHECK: Wiring for open, high resistance,	
	•	SPECIFIED VALUE: 3 – 25%.		short or harness connector for damage, corrosion, loose or broken terminals.	
	•	DEPRESS: Accelerator pedal slowly to WOT while observing the percentage display. The percentage display must increase uniformly.	<b>*</b>	REPAIR: Faulty wiring or connector.	
		CHECK: Throttle valve position at WOT:	_	NO:	
		SPECIFIED VALUE: 84 – 97%.	•	GO TO: Step 3 <del>⇒ page 728</del> .	
		IGNITION: OFF.			
	_	Were Values obtained?			
3	•	REMOVE: Throttle Valve Control Module - GX3- far enough so that the harness connector terminals are accessible.	<b>-</b> ♦	YES: GO TO: Step 4 <del>⇒ page 728</del> . NO:	
		DISCONNECT: Throttle Valve Control Module - GX3- harness connector.	•	GO TO: Step 5 <del>⇒ page 729</del> .	
		IGNITION: ON.		as AG Volkswagen 4.c	
	•	CHECK: Throttle Valve Control Module - GX3- harness connector terminals 2 to 6 for voltage.	noris	Sedby Volkswagen AG. Volkswagen AG does not guarantee or according to the contract of the cont	
		IGNITION: OFF.		Jr. RCC	E_
		voltage. IGNITION: OFF. SPECIFIED VALUE: About 5.0 V. Was Value obtained?			1897
	-	Was Value obtained?			
4	•	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	•	YES: REPLACE: Throttle Valve Control Module - GX3 Refer to appropriate repair manual.	Orenz .
	•	CHECK: Throttle Valve Control Module - GX3- harness connector terminal 1 to the	•	GO TO: Step 6 <u>⇒ page 729</u> .	
		Engine/Motor Control Module -J623- harness	Ľ	NO:	
		connector T60 / 54 for resistance.	•	PERFORM: Visual Inspection of wiring and	
	•	CHECK: Throttle Valve Control Module - GX3- harness connector terminal 3 to the Engine/Motor Control Module -J623- harness connector T60 / 46 for resistance.	•	component.  CHECK: Wiring for open, high resistance, short or harness connector for damage, cor-	
		CHECK: Throttle Valve Control Module -		rosion, loose or broken terminals.	
		GX3- harness connector terminal 4 to the Engine/Motor Control Module -J623- harness connector T60 / 41 for resistance.	<b>*</b>	REPAIR: Faulty wiring or connector.  GO TO: Step 6 ⇒ page 729.	
	•	CHECK: Throttle Valve Control Module GX3- harness connector terminal 5 to the Engine/Motor Control Module -J623- harness connector T60 / 47 for resistance.	His	PERFORM: Visual Inspection of wiring and component.  CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.  REPAIR: Faulty wiring or connector.  GO TO: Step 6 ⇒ page 729.	auros
		SPECIFIED VALUE: 0.5 $\Omega$ (± 0.3 $\Omega$ ).	. 46	Protected by Volkewagen AG. Protected by Copyright Roperted by Cop	
			l	4/00120 GP/NS/N-	



Step	Procedure	Result / Action to Take
5	REMOVE: Engine/Motor Control Module - J623 Refer to appropriate repair manual.	<ul> <li>YES:</li> <li>GO TO: Step 6 ⇒ page 729 .</li> </ul>
	<ul> <li>CHECK: Throttle Valve Control Module - GX3- harness connector terminal 2 to the Engine/Motor Control Module -J623- harness connector T60 / 12 for resistance.</li> </ul>	<ul> <li>NO:</li> <li>◆ PERFORM: Visual Inspection of wiring and component.</li> </ul>
	CHECK: Throttle Valve Control Module - GX3- harness connector terminal 6 to the Engine/Motor Control Module -J623- harness	♦ CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.
	connector T60 / 43 for resistance.	♦ REPAIR: Faulty wiring or connector.
	• SPECIFIED VALUE: $0.5 \Omega$ (± $0.3 \Omega$ ).	♦ GO TO: Step 6 <u>⇒ page 729</u> .
	– Were Values obtained?	
6	Final Procedure     Final Procedure  AG. Volkswagen AG.	YES:     CHECK: Engine/Motor Control Module -J623-
	<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> </ul>	harness connector for any damaged, pushed-
	<ul><li>Does the original DTC return?</li></ul>	Out pinsto
	unes	REPAIR: As necessary.
		♦ If all electrical connections are OK:
		♦ REPLACE: Engine Motor Control Module - J623 Refer to appropriate repair manual.
	whole, is,	◆ Clear the DTC's. Refer to ⇒ M3.3.4 ode 04 – Erase DTC Memory", page 22 .
	art orin,	◆ Repair is complete. Generate Readiness Code. Refer to ⇒ C3.2 ode", page 15.
	ui .	Return vehicle to Customer.
	- Does the original DTC return?	<ul> <li>NO:</li> <li>◆ Perform the diagnostic procedure for any DTC's.</li> </ul>
	leroie	♦ If no DTC's return, the epair is complete.
	or comm	Return vehicle to customer.

The Vehicle Speed Signal or VSS measures Transmission / Transaxle output or Wheel Speed from the ABS. The signal is broadcasted over the CAN Bus. The Engine/Motor Control Module -J623- uses this information to modify engine such as ignition timing, A/F ratio, transmission to initiate diagnostic routines.

## Special tools and workshop equipment required

- ♦ Multimeter.
- Wiring Diagram.
- ♦ Scan Tool.

# Test requirements

- Fuses OK.
- Battery voltage OK.
- Switch OFF all electrical and electronic accessories.



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- Vehicles with automatic transmission, ensure the selector lever position is in "P".
- Vehicles with manual transmission, ensure the shifter lever position is in "N" with the parking brake applied.
- Observe all safety precautions: ⇒ P1.1 recautions", page 2.
- View clean working conditions: ⇒ W1.2 orking Conditions",

#### **Test Procedure**

Step	Procedure	Result / Action to Take
1	<ul> <li>PERFORM: Preliminary Check to verify the customers complaint. Refer to ⇒ C3.1 heck", page 14.</li> <li>Was Complaint verified?</li> </ul>	<ul> <li>YES:</li> <li>GO TO: Step 2 ⇒ page 730 .</li> <li>NO:</li> <li>GATHER more information from customer about the complaint.</li> </ul>
2	<ul> <li>IGNITION: OFF.</li> <li>CONNECT: Scan Tool.</li> <li>ROAD TEST: Vehicle.</li> <li>CHECK: Scan Tool to Speedometer for accuracy.</li> <li>SPECIFIED VALUE: Difference ≤ 10%.</li> <li>Was Value obtained?</li> </ul>	<ul> <li>YES:</li> <li>CONDITION: May be intermittent.</li> <li>PERFORM: Visual Inspection of wiring and component.</li> <li>CHECK: Wiring for open, high resistance, short or harness connector for damage, corrosion, loose or broken terminals.</li> <li>REPAIR: Faulty wiring or connector.</li> <li>GO TO: Step 4 ⇒ page 730.</li> <li>NO:</li> <li>GO TO: Step 3 ⇒ page 730.</li> </ul>
3	CHECK: ABS. CHECK: ABS DTC's. Was the ABS OK?	<ul> <li>YES:</li> <li>CHECK: CAN Bus wiring from the Instrument Cluster Control Module -J285- to the ABS Control Module -J104</li> <li>GO TO: Step 4 ⇒ page 730 .</li> <li>NO:</li> <li>REPAIR: Any ABS concerns 1st.</li> <li>GO TO: Step 4 ⇒ page 730 .</li> </ul>
4	<ul> <li>Final Procedure</li> <li>Perform a road test to verify repair.</li> <li>Do any DTC's return:</li> </ul>	<ul> <li>YES:</li> <li>Check the DTC memory. Refer to ⇒ M3.3.3 ode 03 – Read DTC Memory", page 21.</li> <li>Perform the diagnostic procedure for that DTC.</li> <li>NO:</li> <li>Repair is complete. Generate readiness code. Refer to ⇒ C3.2 ode", page 15.</li> <li>Return vehicle to Customer.</li> </ul>

DAB 7-29-22 FB

# **Cautions & Warnings**

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only.
   Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Volkswagen Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid.
   Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work
  near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery,
  severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

# **Cautions & Warnings**

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the
  vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can
  ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain aspestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing aspestos fibers and aspestos dust. Breathing aspestos can cause serious diseases such as aspestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the
  instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only
  replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good
  repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose
  of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local
  ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that
  automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device.
  Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal
  injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians
  should test, disassemble or service the airbag system.

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# **Cautions & Warnings**

- AG. Volkswagen AG does not Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16,5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the Volkswagen Factory Approved Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- while the office of the correctness, while the office of the correctness, and the office of the correctness of the office of the correctness, and the office of the office of the office of the correctness of the office o Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

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